

AUSTRALIAN INSTITUTE OF PHYSICS
AUSTRALIAN BICENTENARY CONGRESS
OF PHYSICISTS

EIGHTH AIP CONGRESS



Conference Programme

25 - 29 January, 1988
University of NSW
Sydney, Australia



Australia
1788-1988

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Greetings, 1

We welcome you to The Australian Bicentenary Congress of Physicists. It is a significant occasion. First, it represents the largest single gathering of physicists that, as yet, has been assembled in Australia and brings together a large variety of physics based disciplines. Second, it is the 25th Anniversary of the establishment of the Australian Institute of Physics, and we can enjoy the company of most of those who played major roles in this event back in 1963. But of course, the history of physics in Australia extends well beyond the 25 years, and for all the early years we were represented by the UK Institute of Physics or its precursors. Dr G.H. Stafford, the current chairman of the IOP attends our Congress at the invitation of the Federal AIP. To highlight the historical theme, a special lecture on the development of Physics in Australia will be given by Professor H C (Bert) Bolton on Thursday evening. Third, this is a significant time in history for Australian science and technology. For the first time, industry is being asked to play a major role in supporting our standard of living through the development of high technology exports. This challenge to industry also challenges our scientific community to sustain its intellectual input to society and to train scientists suitable for employment in high technology industry. For the first time, scientists are needed to generate wealth through manufacturing, as they have done in the past in mining and agriculture. A Workshop on Science Policy has been arranged for Monday evening.

The scientific part of the meeting will be led by the plenary presentations in representative areas by eminent scientists. The many participating groups have arranged exciting programs, with over 600 presentations including oral (invited and contributed) papers and poster displays. There up to twelve parallel sessions, with occasional coalescence into joint sessions where appropriate. The timetable has been arranged to facilitate movement between the different streams.

In addition, there are the celebrations associated with the bicentenary of European settlement in our nation, and the conference timetable allows participants time to join in these celebrations. Our committees have worked hard to make this meeting a success. We hope that you will enjoy what we and the participating societies have done.

J. Oitmaa, Chairman
NSW Branch AIP

Robert Fisher
P. Fisher, Chairman
Program Committee

B. Window
B. Window, Chairman
Organizing Committee

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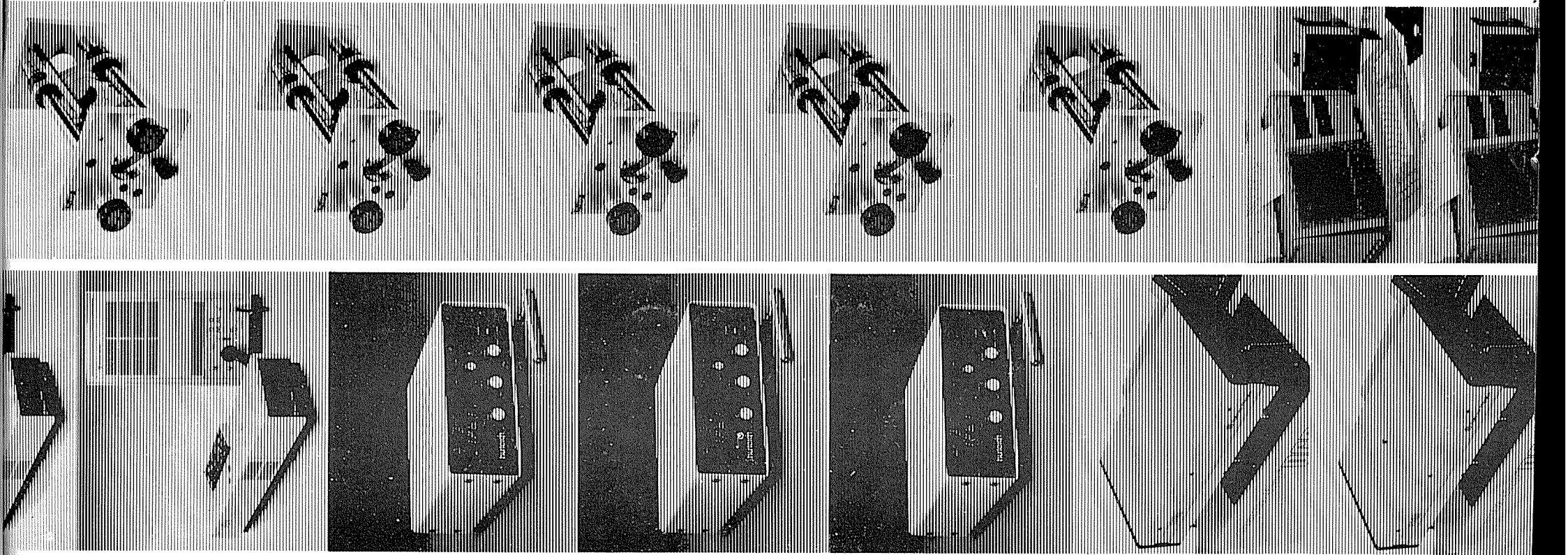
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PO Box 147
Five Dock
New South Wales 2046
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CONGRESS LOCATIONS AND TIMES

RECEPTION - Goldstein College
6 - 8 pm Sunday

REGISTRATION - Goldstein College

OPENING - Science Theatre
9 am Monday

PLENARY LECTURES - Science Theatre
Commence 8.30 am each day

SCIENCE POLICY SEMINAR - Keith Burrows
Lecture Theatre
7.30 - 9.30 pm Monday

HARBOUR CRUISE - Sydney Harbour
11 am - 4 pm Tuesday

CONGRESS DINNER - AJC Randwick
7 - 10 pm Wednesday

DEVELOPMENT OF PHYSICS LECTURE
Keith Burrows Lecture Theatre
8 - 9 pm Thursday

POSTERS - Goldstein College
4 - 6 pm All days

EXHIBITION - Physics 1st year
laboratories
10 am - 5 pm Wed, Thur, Fri

LECTURES - locations in UNSW

MAP

A map of the University of New South Wales is on the back of this book and in the conference satchel.

Need a souvenir?

Lost your shirt?

\$A to spend before you leave?

Want some **bicentennial memorabilia**?

YOU NEED



THE

CONFERENCE

SHOP

Hats

T-shirts

Bumper stickers

Programs

REGISTRATION FEES

Registration fees are
4 day \$100
1 day \$55
Student \$25
Late fee \$10
(after 13 November)
Conference Dinner \$32

REGISTRATION HOURS

| | |
|-----------|------------------|
| Sunday | 4 pm - 7 pm |
| Monday | |
| Wednesday | 8.30 - am - 4 pm |
| Thursday | |
| Friday | |

Registration will be held in Goldstein College throughout the Congress. A bulletin board for communication will be located in the registration area.

COMPANIONS PROGRAM

No formal companions program has been arranged. Tourist information is enclosed in the registration satchel. A get-together of companions will be held at 8.30 am on each day of the conference in Goldstein College. Coffee will be available.

CONFERENCE SHOP

The AIP will be running a small shop for the duration of the conference. This will sell such items as T-shirts, posters, scientific toys and some bicentennial souvenirs.

DETAILS OF SPECIAL EVENTS**RECEPTION**

The reception will be an informal gathering at Goldstein College from 6 to 8 pm on Sunday 24 January. The registration desk will be operating from 4 to 7 pm.

OPENING

The Congress will be opened at 9 am on Monday 25 January by The Hon. B. Jones, Federal Minister for Science and Small Business, in the Science Theatre at the University of New South Wales. This will be followed immediately by a plenary talk by Prof. K. von Klitzing, Nobel Prize winner in Physics in 1985 on "The Quantum Hall Effect".

After a break, there will be two further plenary lectures, one at 10.45 am by Professor B. Schoenborn, on "Structural Molecular Biology - A Big LITTLE Science", and one at 11.30 am by Dr A. Astbury on "Particle Physics - Its Current Status and Future Directions".

SCIENCE POLICY WORKSHOP

The seminar on Science Policy will be held in the Keith Burrows Lecture Theatre, commencing at 7.30 pm on Monday. Speakers will include Mr W.A. Krickler, Chairman IRD Board, ("What are we trying to do?"), Professor T.F. Smith, President FASTS ("The long term benefit of Research Training"), Professor B.H.J. McKellar, Chairman Physics ARGS, ("Can we afford not to do basic research?"), Mr N. Hurst, Deputy Director, Innovation and International Division (DITAC), and Dr C. Adam, Chief, CSIRO Division of Materials Science and Technology. These speakers will form a panel for a discussion period to conclude the seminar.

EQUIPMENT EXHIBITION

This will be held in the first year laboratory in the Physics Building from 10 am - 6 pm, Wednesday to Friday. The location is shown on the map on the back of this book. A list of exhibitors is included.

AUSTRALIA DAY

Festivities are concentrated around the Harbour and Circular Quay areas. The commemoration of the founding of the colony will be held at Customs House Square at 7.30 am. The official celebrations begin later in the Opera House forecourt, with cultural entertainment provided by the Sydney Symphony Orchestra, the Philharmonic Choir, and the Army and Royal Australian Navy Bands, led by soprano Joan Carden. At 3.30 pm the visiting Tall Ships, accompanied by up to 200 large sailboats, will sail west of the Harbour Bridge before turning east to travel to the Heads and leave Sydney for other Australian ports. At 9 pm there will be a giant fireworks display centred on the Bridge.

There will be many other activities organised along the foreshores. Public transport on government services will be free.

HARBOUR CRUISE

The harbour cruise on Tuesday will leave at 10.45 am from Jeffrey Street Wharf, Milsons Point (bus to Wynyard, train to Milsons Point, walk), and return to this point at approximately 4 pm. Cruisers are reminded that this is a BYO cruise.

CONGRESS DINNER

The Congress dinner will be held on Wednesday beginning 7 for 7.30 pm, at the AJC Randwick, close to the University. Entrance is off Alison Road, ample parking is available. Shuttle buses will run to and from Gate 6, UNSW (High Street Entrance to Kensington Colleges) during the periods 6.40 - 7.15 pm and 10.10 - 10.40 pm.

Professor Robert Hanbury-Brown will speak at the dinner.

DEVELOPMENT OF PHYSICS IN AUSTRALIA

This lecture on the development of Australian Physics will be delivered by Professor Bert Bolton at 7.30 pm on Thursday in the Keith Burrows Lecture Theatre.

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INFORMATION ABOUT THE UNIVERSITY OF NEW SOUTH WALES

A campus guide to the University of NSW is enclosed in the registration satchel. A map showing lecture venues and other features is included on the back of this book. A Commonwealth Bank is available on campus.

RECREATIONAL FACILITIES

Delegates are reminded that the University is close to beaches such as Bondi, Bronte, Coogee and Maroubra.

On campus the following facilities are available at low rates on production of name badge during the conference period.

Sport and Recreation Centre (697-4884)

Open 8 am - 11 pm
Badminton, Squash, Table Tennis

Swimming Pool (697-4879)

Open 6.30 am - 9.30 pm

Tennis Courts (697-4877)

Open 8 am - 11 pm

PARKING AND TRANSPORT

Parking at the University is readily available - enter through the gate in Barker Street (off Anzac Parade).

Bus services to and from the city are frequent. The best service is to and from the Anzac Parade entrance to the University. See page 36 of the UNSW campus guide for more details.

COMPUTER PRIZE

Epson Australia have donated a computer system (value \$7000). It will be awarded to the group who submits to the registration desk during the Congress (before Friday) a request of 100 words or less describing why it is essential to their research project to have this computer. The decision will be made by a panel of Prof. A. Klein and our Secretaries, Dr S. Collocott and Dr C. Walsh, after talking to the finalists.

SPONSORS

The conference is supported by the following organisations

- ANSETT
- AUSTRALIAN INSTITUTE OF NUCLEAR SCIENCE AND ENGINEERING
- CSIRO DIVISION OF APPLIED PHYSICS
- EPSON AUSTRALIA
- FEDERAL DEPARTMENT OF INDUSTRY TECHNOLOGY AND COMMERCE
- KODAK AUSTRALIA
- LASER DYNAMICS
- NSW DEPARTMENT OF INDUSTRIAL DEVELOPMENT AND DECENTRALISATION
- NUCLEUS
- QUENTRON OPTICS
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- UNIVERSITY OF NEW SOUTH WALES

SUPPORTING GROUPS

- The Australian Institute of Physics
- Condensed Matter Physics Group
- Physics Education Group
- Nuclear and Particle Physics Group
- Solar, Terrestrial and Space Physics Group
- The Australasian College of Physicists
- Scientists in Medicine
- The Solid State and Physical Chemistry Divisions, Royal Australian Chemical Institute
- The Australian Acoustical Society
- The ANZ Solar Energy Society
- The Australian Optical Society
- The Australian Society for Biophysics
- The Sydney Association for Astrophysics
- The Australian Institute of Nuclear Science and Engineering
- The Gaseous Electronics Meeting

FOOD SERVICES

ON CAMPUS

Esme's Coffee Shop 10 am - 5 pm
Blue Room 7.30 - 4 pm
Roundhouse Cafeteria 7.30 - 4 pm

OFF CAMPUS

Restaurants are plentiful in the Kingsford shopping centre near campus.

Special arrangements for honorary membership have been made with the Castellorizian Club in Anzac Parade (towards Kingsford).

ACCOMMODATION ENQUIRIES

Most of the accommodation is in Colleges at the University of New South Wales. The member of the organising committee responsible for accommodation (Ms M. Welch) will live in Kensington Colleges during the Congress to assist in case of difficulties.

EXHIBITORS

The equipment exhibition includes displays by the following companies. They will be manned from 10 am to 5 pm on Wednesday, Thursday and Friday.

Equipment

DYNAVAC
EPSON AUSTRALIA
ETP OXFORD
FILMTRONICS AUSTRALIA
JOHN MORRIS SCIENTIFIC
KIDGER OPTICS
LASER DYNAMICS
LASEREX
METALASER
QUENTRON OPTICS
R.G. HANSEN AND ASSOCIATES
ROFIN AUSTRALIA
SELBY ANAX
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Books

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THE AUSTRALIAN INSTITUTE OF PHYSICS

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CSIRO Division of Applied Physics

Dr I. Bassett, Secretary
University of Sydney

Dr T. Freeman, Treasurer
Macquarie University

Dr A. Prior, Registrar
Macquarie University

KEY TO PAPERS

Papers are identified by the special interest identifier, the day, morning or afternoon and place in the session program.

Only the first author for each paper is shown in the timetable. Only the first three authors are included in the author indices.

INSTRUCTIONS FOR CHAIRMEN

The times in the various sessions are coordinated to allow delegates to change sessions. **ADHERE STRICTLY TO THE TIMETABLE. DO NOT BE A WEAK CHAIRMAN.** Allow five minutes of the allotted time for questions. Where feasible, arrive ten minutes before the start of the session to meet the speakers.

INSTRUCTIONS FOR SPEAKERS

Normal lecture theatre aids will be available. Special requirements must be made known to the registration desk at least one day in advance.
Arrive ten minutes before the start of your session, introduce yourself to the chairman, and make known your requirements to the projectionist.

INSTRUCTIONS FOR POSTER PRESENTERS

The poster session is from 4 pm to 6 pm on each day in the Undercroft of Goldstein College. Boards will be labelled with the identifier in the program booklet, eg. CMP PT5. You should put your poster up before midday and remove it when the poster session finishes.

NSW AIP BRANCH EXECUTIVE

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University of New South Wales

Prof. L. Cram, V/Chairman
University of Sydney

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CSIRO Division of Applied Physics

GROUP REPRESENTATIVES

Any enquiries about the scientific programs of the specialists sessions should be directed to the various group representatives.

KEY TO SESSION/PAPER NUMBERS

| Special Interest | Identifier |
|---------------------|------------|
| Acoustics | ACO |
| Applied Physics | APH |
| Astrophysics | AST |
| Atomic/Molecular | AMQ |
| Biophysics | BIO |
| Condensed Matter | CMP |
| Education | EDU |
| Gaseous Electronics | GEM |
| Gravitation | GRA |
| Medical Physics | MED |
| mm/Sub mm Waves | MSM |
| Nuclear/Particle | NUP |
| Optics | OPT |
| Plasma Optics | PLA |
| Solar Space | SOL |
| Solar/Terrestrial | SST |

CONVENOR

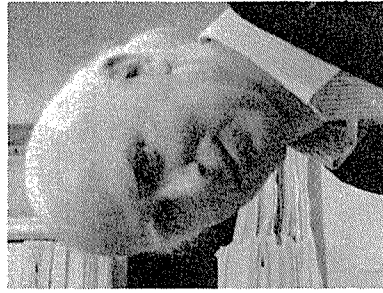
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 Dr G. Tuck
 Dr L. Oliver
 Dr B. James
 A/Prof. L. Peak
 Dr R. McPhedran
 Dr N. Cramer
 Dr D. Mills
 A/Prof. B Fraser

Plenary Session Speakers

Professor A. Astbury

Alan Astbury was born in 1934 in Crewe, England. He obtained a B.Sc. and Ph.D. at the University of Liverpool for research performed on the Synchrocyclotron. He then worked in the USA as a Research Associate at the Lawrence Berkeley Laboratory California from 1961 to 1964, returning to the UK to take up a Research Scientist Post at the Rutherford Laboratory, a position he occupied until 1983.

For two spells he was a Visiting Scientist at CERN (1970-1974 and 1980-1983); during the second spell in CERN he was co-spokesman with Carlo Rubbia of the UA1 experiment. In 1983 he moved to the University of Victoria, Victoria, B.C., Canada to become the R.M. Pearce Professor of Physics.



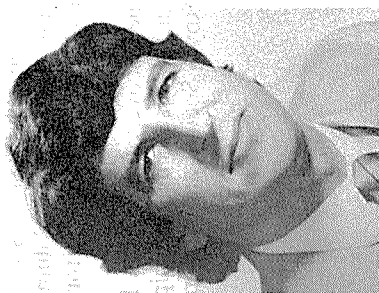
Professor L.A. Frank

Louis Frank was educated at the University of Iowa, completing his B.S. in 1960 and his Ph.D. in 1964. He has been at Iowa since then, his present position being Professor of Physics. Dr Frank has been an experimenter, co-investigator or principal investigator for instruments on 37 spacecraft, from Pioneers 3 and 4, to the recent Galileo Jupiter probe and the Dynamics Explorer mission. He is a Fellow of the American Geophysical Union, and a recipient of the National Space Act Award.



Professor M.A. Green

Martin A. Green is Professor of Electrical Engineering at the University of New South Wales. Born in Brisbane, he completed his B.E. and M.Eng.Sc. degrees at the University of Queensland followed by a doctorate completed within the Department of Engineering Physics at McMaster University, Canada. He joined the University of New South Wales in 1974 where he has played a major role in the establishment of the Solar Photovoltaic Laboratory and the Joint Microelectronics Research Centre, the latter under the Commonwealth Research Centres of Excellence Programme. His research contributions to the photovoltaic and microelectronic areas have been recognized by the award of the Pawsey Medal by the Australian Academy of Science, the Edgeworth David Medal by the Royal Society of New South Wales and, more recently, a Personal Chair at the University of New South Wales, the first in the Faculty of Engineering since the University's foundation.



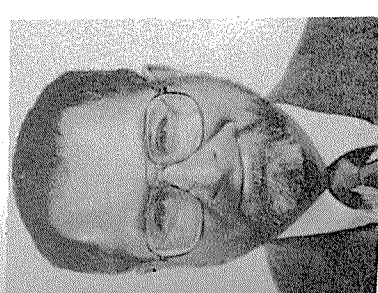
Professor O.V. Lounasmaa

Professor Lounasmaa earned his Bachelor's degree in Physics from the University of Helsinki in 1953 and his D. Phil. degree from Oxford in 1958. He spent two years in Finland and five at Argonne Laboratory in the USA, working on ³He and ⁴He and measuring the nuclear heat capacity of rare earth metals. He then returned to Finland and was appointed Professor of Technical Physics at the Helsinki University of Technology. He founded the Low Temperature Laboratory at that University and became its Director. In 1970 he was appointed Research Professor of the Academy of Finland, his present position. Professor Lounasmaa is a member of the Finnish Academy of Arts and Sciences and the Royal Swedish Academy of Sciences.



Dr M.M. Nieto

Michael Nieto graduated from the then Liberal-Arts College at the University of California, Riverside and obtained a Ph.D. from Cornell University. Somewhat to his surprise he became a theorist rather than, as was his intention, an experimental high-energy physicist. After spending six years in post-doctoral work at C.N. Yang's new institute for Theoretical Physics at the State University of New York, Stony Brook, the Niels Bohr Institute of the University of Copenhagen, the University of California, Santa Barbara, H. Yukawa's Institute for Fundamental Research at the University of Kyoto, Japan, Purdue University, Indiana, he took a permanent position, in 1972, in the Theoretical Division of Los Alamos National Laboratory. His main interests are in high energy physics, quantum mechanics and astrophysics. All this is combined in his current focus, the possibility of there being unsuspected, new gravitational forces. He also has an interest in the history of science.



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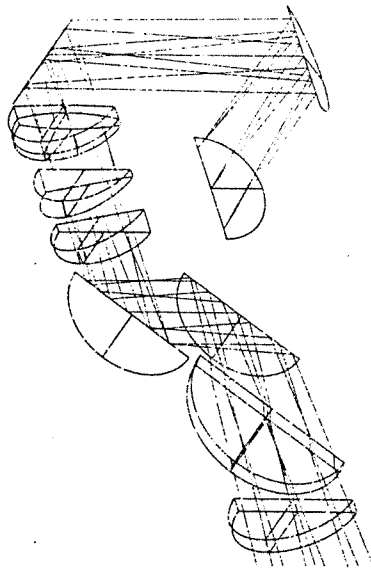
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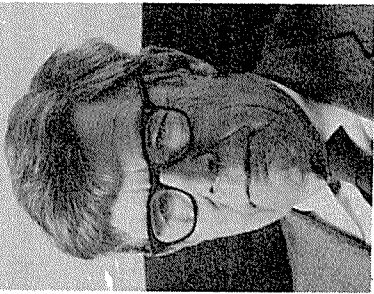
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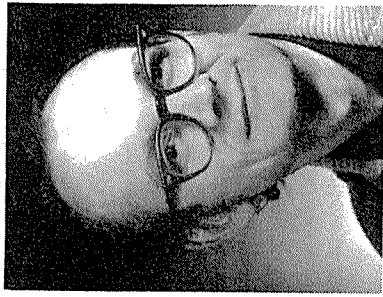




Dr R.S. Pease

Rendel Sebastian Pease joined the Atomic Energy Research Establishment at Harwell, UKAEA in 1947. From 1947 to 1955 he specialised in solid state research, particularly irradiation damage and neutron diffraction. Since 1955 he has been working on controlled thermonuclear reactions including work on the pioneer ZETA apparatus, firstly as leader of Physics Research Section and then as leader of the ZETA physics team. He moved to Culham Laboratory as Division Head in 1964, and was Director of Culham Laboratory from 1967 to 1981. He became Atomic Energy Authority Director for the Fusion Programme in 1981. He was Chairman of the International Fusion Research Council (IAEA) from 1976 to 1983. He is a past President of the U.K. Institute of Physics and was appointed a Vice President of the Royal Society in November 1986.

Dr B.P. Schoenborn
Dr Schoenborn was born in Switzerland; he earned his Bachelor's degree at UCLA in 1958 and his Ph.D. at the University of New South Wales in 1962. He worked as a biophysicist at the University of California (San Francisco) and at Cambridge before joining Brookhaven National Laboratory in 1967. He is at present the Associate Chairman for Structural Biology at Brookhaven and an Adjunct Professor of Chemistry at Columbia University. He has pioneered the use of neutron diffraction as a technique for the analysis of biological structures. Dr Schoenborn is a member of the Australian Institute of Physics and of the British and American Biological Societies.



Professor C.H. Townes

Professor Townes studied at Furman and Duke Universities before his Ph.D. studies at the California Institute of Technology. He held positions at CalTech, Bell Laboratories, Columbia University and MIT prior to his appointment as Professor at the University of California (Berkeley).

He was a joint recipient of the Nobel Prize in 1964 for his role in the discovery of the laser. His most recent work has been in the field of infrared astronomy. Professor Townes has membership in many societies, amongst these are: Foreign Membership of the Royal Society and Honorary Membership of the Optical Society of America.



Professor K. von Klitzing

Professor von Klitzing was born in 1943 in Germany. His undergraduate studies were at the Technical University Braunschweig and his graduate studies, leading to the award of his Ph.D. in 1972, at the University of Würzburg. He stayed at Würzburg until 1980 although some time was spent at the Clarendon Laboratory in England and the High Magnetic Field Laboratory in Grenoble. His work at Würzburg led to his being awarded the Nobel Prize in 1985 for the discovery of the Quantum Hall Effect. From 1980 to 1984 he was Professor at the Technical University, Munich and since 1985 he has been Director at the Max-Planck-Institut für Festkörperforschung, Stuttgart.

THE AUSTRALIAN BICENTENARY CONGRESS OF PHYSICISTS JANUARY 1988

PROGRAM

PLENARY LECTURES

MONDAY

9.30 PLENARY LECTURE Science Theatre

THE QUANTUM HALL EFFECT

K.v. Klitzing, Max Planck Institut für Festkörperforschung, Heisenbergstrasse 1, Postfach 800665, 7000 Stuttgart 80

The quantum Hall effect is related to basic research on modern microelectronic devices containing a two-dimensional electronic system. Most of the work has been done on GaAs-AlGaAs heterostructures but also on other systems like superlattices or field effect transistors, using different semiconductors.

The Lecture will start with a general introduction of the quantum Hall effect, then the present status of the application of the quantized Hall resistance in metrology will be summarized. Finally some problems related to a microscopic description of the electronic properties of a two-dimensional system, in strong magnetic fields, will be discussed.

10.45 PLENARY LECTURE Science Theatre

STRUCTURAL MOLECULAR BIOLOGY - A BIG 'LITTLE SCIENCE'

Berno P. Schoenborn, Department of Biology, Brookhaven Natl. Laboratory, Upton, N.Y. and Department of Biochemistry, Columbia University, N.Y. USA.

The enormous diversity of biological function is thought to be due to the interplay between amino acid sequence and their spatial arrangement. The study of biological structure has become an intensive area of activity utilizing techniques from genetic engineering to neutron crystallography. The use of synchrotron radiation with its incredible brightness and wavelength tunability has revolutionized structural studies through its ability to collect time dependent data. To take advantage of these new sources, better focussing optics and high rate position sensitive detectors and new approaches to data acquisition are needed to process the thousands of reflections that are produced eg. in a Laue type data collection scheme for dynamic studies. It has become possible to calculate electrostatic field maps of proteins; electrostatics has long been suspected of playing a major role in a protein's structure. For this accurate positional data of atoms, solvent, ions and charge are needed. Data on charge location and solvent is still scarce but Neutron Diffraction with its ability to 'see' hydrogen atoms has become valuable in locating protons on groups like histidies etc. The ability to distinguish between hydrogen and deuterium allows the study of large molecular complexes (eg. Ribosomes and membrane components such as the Na/K ATP ase). This work has been supported by the National Science Foundation and the Department of Energy.

11.30 PLENARY LECTURE Science Theatre

PARTICLE PHYSICS - ITS CURRENT STATUS AND FUTURE DIRECTIONS
Alan ASTBURY, University of Victoria, Victoria, B.C., Canada

The talk will review the current picture we have of the constituents of matter and the forces between them. From an experimental viewpoint it will show how experiments performed in High Energy Physics have led to what is currently known as the Standard Model. Many questions remain. Some of these can be addressed at future accelerators, either under construction or planned, around the world. The crucial experiments will be outlined to indicate possible future directions.

PLENARY LECTURES

WEDNESDAY

8.30 PLENARY LECTURE Science Theatre

INFRA RED ASTRONOMY

C.H. Townes
University of California, Berkeley.

9.15 PLENARY LECTURE Science Theatre

ON THE INFLOUX OF SMALL COMETS INTO THE EARTH'S ATMOSPHERE

L. A. Frank, Department of Physics and Astronomy, The University of Iowa, Iowa City, Iowa 52242

Unique images of the Earth's atmospheric dayglow at ultraviolet wavelengths as viewed from the satellite Dynamics Explorer 1 reveal the unexpected presence of transient intensity decreases with spatial dimensions ~ 50 km. These decreases, or 'atmospheric holes', are interpreted in terms of the obscuration of the dayglow by clouds of water vapor from the disruption and subsequent vaporization of small comets at altitudes $\sim 1,000$ to $3,000$ km above the Earth's atmosphere. The corresponding flux of small comets into the atmosphere is $\sim 10^7$ comets/year, each with mass $\sim 10^8$ gm. No other viable explanation has been found at present. The existence of such a large cometary flux has startling implications for the Earth and the rest of the solar system.

PLENARY LECTURES

THURSDAY

8.30

PLENARY LECTURE

Science Theatre

THE PRINCIPLE OF EQUIVALENCE, QUANTUM GRAVITY, AND NEW GRAVITATIONAL FORCESMichael M. Nieto, F. Goldman, and Richard J. Hughes.
Los Alamos National Laboratory.

It is the goal of elementary particle physics to construct and test a unified quantum theory of the four fundamental forces (the strong nuclear, the electromagnetic, the weak nuclear, and the gravitational). Although great progress has been made, the gravitational interaction has not been successfully quantized or unified. However, exciting efforts in this direction lead to the generic conclusion that a successful theory will have new gravitational forces. These new forces would apparently not obey the principle of equivalence and have finite ranges, violating Newton's Law. Such effects have recently been reported. The predictions of these ideas are compared to completed and ongoing experiments, as well as to the alternate suggestion that instead of seeing "new gravitational forces", one may be seeing a new "fifth force" in nature.

9.15

PLENARY LECTURE

Science Theatre

PHOTOVOLTAICSMartin A. Green, Joint Microelectronics Research Centre,
University of New South Wales, Kensington 2033.

Photovoltaics provide a simple, elegant way of converting sunlight directly into electricity by taking advantage of the interaction of light with semiconductors. The simplicity of the conversion process and its inherent reliability makes photovoltaics a candidate for large scale electricity generation beginning in the early decades of the next century. The current status of photovoltaics is reviewed. Also reviewed are the approaches being explored to bring costs down while simultaneously increasing the efficiency of the energy conversion process.

PLENARY LECTURES

FRIDAY

8.30

PLENARY LECTURE

Science Theatre

MAGNETOENCEPHALOGRAPHY - A NON-INVASIVE METHOD OF BASIC AND APPLIED BRAIN RESEARCH. Olli V. Lounasmaa, Low Temperature Laboratory, Helsinki University of Technology, Espoo 15, Finland.

Electric currents carry information from one neuron to another in the brain. When thousands of neighboring nerve cells act in concert, weak (30-500 fT) magnetic fields are produced which can be measured noninvasively outside the skull. The magnetic field detector used is the superconducting quantum interference device. A home-built magnetometer, with seven IBM manufactured dc SQUIDS, has been in use in Helsinki for about a year. This instrument, with a sensitivity of 5fT/Hz, is currently the best in the world. A 32-SQUID device is under development and should be ready by the middle of 1988.

In a typical MEG experiment, the subject receives some sensory stimuli, for example tone pips or flashes of light. Several tens of milliseconds later a rapidly changing magnetic field can be recorded. Measurements must be made at many points and, at each site, the stimulus must be repeated 50 - 100 times in order to obtain enough data for successful signal averaging and for calculating the 'topographic' field map. This shows the importance of MEG instruments.

By stimulating peripheral nerves we have succeeded, for example, in differentiating between activities at the primary and secondary somatosensory cortices. We have also discovered cortical areas evoked by painful stimuli. Activity in the auditory cortex has also been studied extensively. For example, a new response has been found to fricative consonant/vowel transitions in simple words. The signal seems to be determined by acoustic rather than phonetic features of the stimuli. By investigating the spatiotemporal course of MEG responses it should be possible to study some aspects of signal processing in the brain. Basic research of this type may, in the future, be one of the most important and fundamental applications of magnetoencephalography.

9.15

PLENARY LECTURE

Science Theatre

CONTROLLED NUCLEAR FUSION: RECENT RESULTS AND FUTURE PROSPECTS

R. S. Pease

Culham Laboratory,

U.K. Atomic Energy Authority.

Experiments on the generation of high temperature hydrogen plasma and its control by magnetic fields have produced conditions close to those needed for net energy generation by thermonuclear reactions in deuterium-tritium mixtures. Sustained fusion reaction rates of about 10 kW are achieved in deuterium and deuterium-helium-3 plasmas, which extrapolate to megawatts of power in deuterium-tritium plasma. Key issues of plasma physics and especially of the magnetic thermal insulation remain to be resolved in order to reach quasi-d.c. self-sustained thermonuclear reactions. The various alternative approaches to controlled fusion are compared, and the prospects for future progress are summarised.

LUNCHTIME LECTURES

MONDAY

1.45

LUNCHTIME LECTURE

Murphy Theatre
Chemistry Bldg

Opening of Optics Chair A/Prof. M. Waterworth

SUNLIGHT, ICE CRYSTALS, AND SKY ARCHEOLOGY. R. Greenler, University of Wisconsin, Milwaukee USA.

Many beautiful sky effects result from the interaction of sunlight with minute ice crystals falling through the air. Some of these effects are familiar: halos, sun dogs, and perhaps sun pillars. Others are less familiar, even though they can be seen by any interested person, with no special equipment. Many have not been well understood. We have developed a computer-simulation technique to investigate these effects and have gained considerable insight into their origins. In some cases we can now understand interesting things about observations recorded centuries ago.

The origins of several sky effects will be discussed. Slides and demonstrations will illustrate the wealth of interesting things that can be seen in the sky.

WEDNESDAY

1.30

LUNCHTIME LECTURE

Keith Burrows Theatre

WHAT CAN SCIENTISTS DO TO STOP THE NUCLEAR ARMS RACE?Alan Runciman
Laser Physics Centre, Research School of Physical Sciences,
Australian National University, Canberra A.C.T.

The period 1982-1987 covers a distinct phase in the attitude of physicists in Australia to the nuclear arms race. The beginning was a delayed reaction to the N.A.T.O. decision in 1979 to introduce cruise and Pershing missiles into Europe. This marked a new phase in the nuclear arms race and led to a world-wide peace movement. In 1982 Scientists Against Nuclear Arms (SANA) was formed and has played a major role in educating the public on the nuclear arms race and related issues. There has also been a good coverage of nuclear issues in the Australian Physicist and this will be reviewed. Will an I.N.F. agreement spell an end to the peace activism of the last six years? An attempt will be made to answer this question and suggestions will be made of the ways in which scientists can contribute to the modified peace movement likely to emerge in the next few years.

THURSDAY

1.30

LUNCHTIME LECTURE

Keith Burrows Theatre

PRIVATE-SECTOR RESEARCH AGENCIES - A THREAT TO TRADITIONAL RESEARCH INSTITUTIONS?Paul L Hewitt
Research Director, Hunter Technology Development Centre Ltd
PO Box 168, The Junction, NSW 2291

Traditional research organisations in Australia have tended to be in the public sector e.g. CSIRO, DSTO, ANSTO, and tertiary education institutions. These organisations have been subjected to significant, and often vitriolic, criticism in recent years, as demands for relevance and accountability have intensified. As a consequence (in part) of the perceived failure of traditional research organisations to be involved with national development (but rather with international reputations), private sector research organisations are beginning to appear around Australia as they have done overseas. Bond University is the largest and best known, but there are several smaller ones such as the Hunter Technology Development Centre in Newcastle. Will such market-oriented research institutions gradually replace traditional public sector bodies, or will a system akin to the public/private school system evolve?

LUNCHTIME LECTURES

FRIDAY

1.30

LUNCHTIME LECTURE

Keith Burrows Theatre

THE USE OF THE SOFT PALATE IN 'BEL CANTO' SINGING.

G.J. Troup*, E. Farnetani†, F. Ferrero†, M. Volo† and G. Welch**

* Physics Department, Monash University, Clayton 3168, Victoria, Australia.

† Centro di Studio per le Ricerche di Fonetica del C.N.R., via Oberdan 10, Padova, Italy.

** 2 Elborough St., Southfields, London, UK.

The matter of whether the soft palate should be open or closed, for vowels which are supposed to be non-nasalised, in 'bel canto' singing, has been controversial for some time. The results of two X-ray studies (one with 'conventional' X-rays, the other with low energy X-rays: Xeroradiography) on a number of singers is presented, together with the results of a pilot study using nasal aerodynamic flow. The results indicate that some singers open the soft palate on some (non-nasalised) vowels, while others do not. The soft-palate opening can also be pitch-dependent. Those singers who have been taught to form a 'dome' of the soft palate, in order to increase the pharyngeal space, do not open the soft palate.

NEW PHYSICS TITLES FROM CAMBRIDGE

RENORMALIZATION - John C. Collins

An Introduction to Renormalization, the Renormalization Group and the Product Expansion
A systematic and thorough presentation at a level accessible to those already familiar with the rudiments of quantum field theory. 0521 311772 Pb. \$50.00

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CAMBRIDGE UNIVERSITY PRESS 10 STAMFORD RD. OAKLEIGH VIC 3166 Ph. [03]568 0322



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Contact: Dr J.G. Collins, Assistant Chief
Telephone: (02) 467 6211

Contact: Dr W.R. Blevin, Assistant Chief
Telephone: (02) 467 6211

Adelaide Branch: Mr J. Tapping, OIC
Telephone (08) 268 0111
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Collaboration and Consultation

Under the Applied Physics Industrial Program and other national programs the Division fosters strategic and applied research into new technology of immediate relevance to industry. Collaborative projects can relate to the development of new products or to improving the quality or manufacturing efficiency of existing products.

For further information regarding collaboration with the Division please contact:

Dr J.J. Lowke, Chief,
CSIRO Division of Applied Physics,
PO Box 218, Lindfield, NSW 2070
Telephone: (02) 467 6211
Telex: (AA) 26296
Facsimile: (02) 467 1902

Measurement Science

As one of the world's leading standards laboratories the Division:

- maintains the Australian standards of measurement
- provides a primary calibration service
- collaborates with national organisations in measurement and testing
- ensures international traceability of standards for trade purposes and offsets agreements
- develops specialist instruments
- engages in industrial measurement problems

MONDAY MORNING

35

9.00

OFFICIAL WELCOME

Science Theatre

Professor J. Ronayne

Pro Vice Chancellor, University of New South Wales

Dr. J. G. Collins

President, Australian Institute of Physics

9.10

OPENING ADDRESS

Science Theatre

The Hon. B. Jones

Federal Minister for Science and Small Business

9.30

PLENARY LECTURE

Science Theatre

Dr. K. von Klitzing

Nobel Prize Winner for Physics, 1985

Max Planck Institut fur Festkorperforschung

"The Quantum Hall Effect"

10.15

Morning Tea

10.45

PLENARY LECTURE

Science Theatre

Dr. B. P. Schoenborn

Brookhaven National Laboratory and

Columbia University

"Structural Molecular Biology- A Big LITTLE Science"

11.30

PLENARY LECTURE

Science Theatre

Dr. A. Astbury

University of Victoria, Victoria, B.C., Canada

"Particle Physics: its Current Status
and Future Directions"

12.15

Lunch

1.15⁰⁰

LUNCHTIME LECTURE

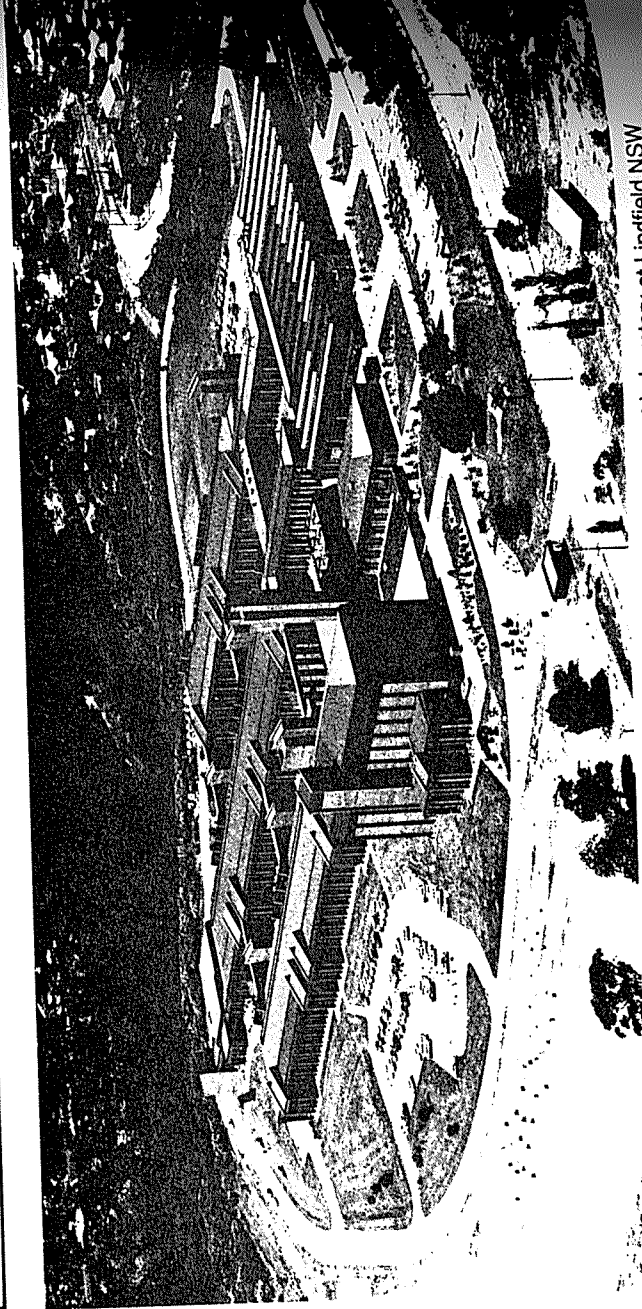
Murphy Theatre
Chemistry Bldg

Opening of Optics Chair A/Prof. M. Waterworth

Prof. J. Greenler

President of the Optical Society of America
University of Wisconsin, Milwaukee"Sunlight, Ice Crystals and Sky Archeology"

1.15



The headquarters of the Division is located in the National Measurement Laboratory at Lindfield NSW

GOLDEN JUBILEE OF THE DIVISION OF APPLIED PHYSICS

The Division was established in 1938 as the National Standards Laboratory and the original three Officers in Charge were appointed in November of that year. Since then the Division has had a distinguished period of assistance to Australian industry and the community and has many notable achievements in both the national and international scene.

The 50th anniversary of the Division will be marked by a series of events to be held late in 1988.

The schedule for the Golden Jubilee celebration is:

| | | |
|-----------|-----------------|-------------------|
| Monday | 31 October 1988 | Jubilee Symposium |
| Tuesday | 1 November 1988 | Jubilee Symposium |
| Wednesday | 2 November 1988 | Jubilee Ball |
| Friday | 4 November 1988 | Open Day |
| Sunday | 6 November 1988 | Open Day |

MONDAY AFTERNOON

2.00 SPECIALIST LECTURES

APPLIED PHYSICS

Room 27
Physics Bldg
"Applied Surface Science"
Chair Dr. R. Payling

2.00 APH - MA1 (INVITED)
STRUCTURE OF OXIDE FORMED AT ROOM TEMPERATURE
ON (110) NI-CR BINARY ALLOYS AT LOW AND NEAR
HOLLOWAY P.H. Univ. of Florida

(invited talk continues)

2.30 APH - MA2 (INVITED)

APPLICATIONS OF ION IMPLANTATION TO STUDY THE
INFLUENCE OF DOPANTS ON OXIDE FILM GROWTH
COCKING J.L. MRL, Melbourne

(invited talk continues)

3.00 APH - MA3

THE USE OF LOW ENERGY ION SCATTERING IN
SURFACE ANALYSIS
O'CONNOR D.J. Univ. of Newcastle

3.15 APH - MA4

EFFECT OF ION BOMBARDMENT DURING LOW MOBILITY
GROWTH OF METALLIC SUPERLATTICES
WINDOW B. CSIRO Applied Physics

3.30 APH - MA5

DEPTH PROFILING OF IMPLANTED N IN STEEL
VEITCH C.J RMIT

3.45 APH - MA6

FTIR STUDIES OF ABSORBATES ON CATALYST SURFACES
PANG L. Univ. of Tasmania

ASTROPHYSICS/MSM WAVES

Smith Theatre
Chemistry Bldg
"Milli- and Submillimetre
Wave Astronomy"
Chair Dr. I. Whitbourn

2.00 AST - MA1 (INVITED)
THE J.C. MAXWELL TELESCOPE
SMITH M.G. Joint Astronomy ctr

(invited talk continues)

2.30 AST - MA2 (INVITED)

AIRBORNE ASTRONOMY IN THE FAR INFRARED AND SUB-MM
STOREY J.H.V. Univ. of NSW

(invited talk continues)

3.00 AST - MA3 (INVITED)

FUTURE DIRECTIONS FOR MM-WAVE ASTRONOMY
ROBINSON B.J. CSIRO Radiophysics

(invited talk continues)

3.30 AST - MA4

INFRARED OBSERVATIONS OF STAR FORMATION REGIONS
ZEALEY W.J. Univ. of Wollongong

3.45 AST - MA5

PROTOSTELLAR CLUSTERS
RANDELL P. Univ. of Wollongong

MONDAY AFTERNOON

2.00 SPECIALIST LECTURES

ATOMIC/MOLECULAR PHYSICS

Hall B
Webster Bldg
"Electron Scattering"
Chair Prof. J. F. Williams

2.00 AMQ - MA1 (INVITED)
POLARIZED ELECTRON PROBES IN ATOMIC AND
SURFACE PHYSICS
CELOTTA R.J. NBS Gaithersburg

(invited talk continues)

2.45 AMQ - MA2 (INVITED)

ELECTRON SCATTERING CROSS-SECTIONS AT VERY LOW
ENERGIES - A COMPARISON OF RESULTS
BUCKMAN S.J. ANU

(invited talk continues)

3.30 AMQ - MA3

SUPER ELASTIC SCATTERING STUDIES IN ATOMIC
SODIUM
FARRELL P.M. Griffith Univ.

3.45 AMQ - MA4

STUDY OF SPIN POLARIZED ATOMS BY TRANSMISSION
ZEEMAN BEAT SPECTROSCOPY
HANNAFORD P. CSIRO Mat. Sci. Tech.

4.00 AMQ - MA5

ANOMALOUS X-RAY SCATTERING FROM FREE AND BOUND
ELECTRONS
CREAGH D.C. A.D.F.A.

BIOPHYSICS

Keith Burrows Theatre
Physics Bldg
"General Biophysics"
Chair Dr. Phillip W. Kuchel

2.15 BIO - MA1 (INVITED)

SYMPOSIUM LECTURE
SCHOENBORN B. Brookhaven Nat. Labs.

(invited talk continues)

2.45 BIO - MA2

UBIQUINONE AND GRAMICIDIN A IN LIPID BILAYERS AS
SEEN BY NEUTRON DIFFRACTION
WEIR L.E. CSIRO Food Research

3.00 BIO - MA3

THE SIMULATION OF ESR SPECTRA OF ALIGNED LIPID
MULTILAYERS
SEPAROVIC F. CSIRO food research

3.15 BIO - MA4

TEMPERATURE AND HYDRATION EFFECTS ON THE
CONFORMATION OF ALIGNED EGG YOLK
BRAACH-MAKSYTYI CSIRO

3.30 BIO - MA5

NMR STUDIES OF THE MYOSIN AND ATP BINDING SITES
ON ACTIN
BARDEN J.A. Univ. of Sydney

3.45 BIO - MA6

THE QUANTITATIVE EPR STUDY OF METALLOPORPHYRIN
BINDING TO DNA. I
FENG Y. Monash Univ.

4.00

POSTER PRESENTATIONS AND REFRESHMENTS

7.30

Prof. T. F. Smith, F.A.S.T.S.,
Dr. C. Adam, C.S.I.R.O.

4.00 POSTER PRESENTATIONS AND REFRESHMENTS

7.30

SCIENCE POLICY WORKSHOP MR. W. Krickef, I.R.D.B.
Prof. B. H. J. McKellar, A.R.G.S.

MONDAY AFTERNOON

SPECIALIST LECTURES

2.00 CONDENSED MATTER PHYSICS
Theatre LG1
Electrical Engineering Bldg
"General Condensed Matter
Physics"

Chair Dr. G. K. White

2.00 CMP - MA1 (INVITED)
NUCLEAR MAGNETIC ORDERING IN COPPER AND SILVER AT
NANOKELVIN TEMPERATURES
LOUNASMAA O. Helsinki Univ. of Technology

(invited talk continues)

2.30 CMP - MA2
INTERNAL FRICTION IN NIOBIUM AT ULTRALOW
TEMPERATURES
BLAIR D.G. Univ. of W.A.

2.45 CMP - MA3
SURFACE ANALYSIS USING ION BEAMS
KENNY M.J. CSIRO Materials Science

3.00 CMP - MA4
COMPUTER SIMULATION OF GLASSY METALS
COLLINGS A.F. CSIRO Applied Physics

3.15 CMP - MA5
PLASMONS AT SIMPLE METAL SURFACES
DOBSON J.F. Griffith Univ.

3.30 CMP - MA6 (INVITED)
ULTRADENSE HYDROGEN AT TWO MILLION
ATMOSPHERES
ASHCROFT N.W. Cornell Univ.

(invited talk continues)

EDUCATION
Theatre L1
Applied Science Bldg
"Perspectives in
Physic Education"

Chair Ms J. Powe

2.00 EDU - MA1 (INVITED)
TRENDS IN PHYSICS EDUCATION FOR WOMEN
KIVELSON M. UCLA

(invited talk continues)

2.30 EDU - MA2 (INVITED)
A RESPONSE TO DEMANDS FOR EDUCATION: THE
VICTORIAN APPROACH
OPAT G. Univ. of Melbourne

(invited talk continues)

3.00 EDU - MA3 (INVITED)
PHYSICS BY POST - OFF-CAMPUS STUDIES IN
APPLIED PHYSICS
WILKINSON J.E. Capricornia I.A.E.

(invited talk continues)

4.00 POSTER PRESENTATIONS AND REFRESHMENTS

7.30 SCIENCE POLICY WORKSHOP Mr. W. Kricke, I.R.D.B.
Prof. B. H. J. McKellar, A.R.G.S.

MONDAY AFTERNOON

SPECIALIST LECTURES

OPTICS

Murphy Theatre
Chemistry Bldg
"Industrial Optics"
Chair Prof. R. Greenler

2.00 OPT - MA2 (INVITED)
THE PRECISION OPTICAL INDUSTRY - PRESENT STATUS
AND FUTURE TRENDS
BAKER L.R. Sira Ltd

(invited talk continues)

2.45 OPT - MA3
DEVELOPMENT OF THE AUSTRALIAN OPTICAL INDUSTRY -
A GOVERNMENT PERSPECTIVE
DONNELLY J. DITAC

3.00 OPT - MA4
THE OPTICAL DESIGN OF A SPECTROMETER FOR
REMOTE SENSING
JONES D. RMIT

3.15 OPT - MA5
FREQUENCY STABILIZED WAVEGUIDE LASERS
WALSH C.J. CSIRO Applied Physics

3.30 OPT - MA6 (INVITED)
ION-ASSISTED OPTICAL THIN FILM DEPOSITION
MARTIN P.J. CSIRO Applied Physics

(invited talk continues)

4.15 OPT - MA7
MONITORING OF THIN FILM GROWTH BY IN-SITU
ELLIPSOMETRY
NETTERFIELD R.P. CSIRO Applied Physics

4.30 OPT - MA8
APPLICATIONS OF PROGRAMMABLE INTERFEROMETRY
PFLUKE P. Zygo Corp.

4.45 OPT - MA9
PARTICLE PAIRS AND OPTICAL PROPERTIES OF
COMPOSITE MATERIALS
POLADIAN L. Univ. of Sydney

NUCLEAR/PARTICLE PHYSICS
Hall A
Webster Bldg
"Light Nuclei and
Intermediate Energy I"
Chair Dr. B. Robson

2.00 NUP - MA1 (INVITED)
NUCLEON CHARGE EXCHANGE STUDIES AT INTERMEDIATE
ENERGIES
ALFORD W.P. Univ. of Western Ontario

(invited talk continues)

2.45 NUP - MA2
SPIN-ORBIT INTERACTION FOR 52 MEV VECTOR
DEUTERONS
NURZYNSKI J. A.N.U.

3.00 NUP - MA3
THE FIRST EXCITED STATES OF ^9Be and ^9B
BARKER F.C. A.N.U.

3.15 NUP - MA4
DEUTERON PHOTODISINTEGRATION UP TO 140 MEV
JAUS H. Univ. of Zurich

3.30 NUP - MA5
THE PHOTONEUTRON AND PHOTOPROTON CROSS SECTIONS
OF ^9Be IN THE MEDIUM ENERGY RANGE
RASSOOL R.P. Univ. of Melbourne

3.45 NUP - MA6
ISOVECTOR GIANT RESONANCES IN $^{90}\text{Zr}(n,p)$ AND
 $^{208}\text{Pb}(n,p)$ AT 200 AND 460 MEV
RAYHOOD K.J. Univ. of Melbourne

MONDAY AFTERNOON

SPECIALIST LECTURES

2.00 PLASMA PHYSICS
Dwyer Theatre
Chemistry Bldg
"Magnetic Confinement I"
Chair

2.00 PLA - MA1 (INVITED)
EXPERIMENTAL RESEARCH ON HELIACS
HAMBERGER S.M. ANU

(invited talk continues)

2.30 PLA - MA2 (INVITED)
A HISTORY OF JXB CURRENT DRIVE AND THE ROTAMAK
DONNELLY I.J. A.N.S.T.O.

3.00 PLA - MA3
CURRENT STATUS OF THE STELLARATOR PROGRAM
JOHNSON J.L. Princeton Univ.

3.15 PLA - MA4
ROTAMAK SCALING EXPERIMENTS
COLLINS GA. ANSTO

3.30 PLA - MA5
BALLOONING MODE SCHRÖDINGER EQUATION
DEWAR R.L. ANU

3.45 PLA - MA6
ALFVEN WAVE HEATING STUDIES IN THE TORTUS TOKOMAK
BALLICO M.J. Univ. of Sydney

4.00 PLA - MA7
LASER INDUCED FLUORESCENCE EXPERIMENTS ON THE
TORTUS TOKOMAK
WRIGHT W. Univ. of Sydney

4.15 PLA - MA8
ROTATING FIELD CURRENT DRIVE IN SPHERICAL PLASMAS
STORER R.G. Flinders Univ.

POSTER PRESENTATIONS AND REFRESHMENTS

7.30 SCIENCE POLICY WORKSHOP Mr. W. Krickler, I.R.D.B.
Prof. B. H. J. McKellar, A.R.G.S.

SOLAR SPACE TERRESTRIAL A

Room G24
Electrical Engineering Bldg
"Stellar Activity"
Chair Dr. C. Durrant

2.00 SST - MA1 (INVITED)
ACTIVITY ON LATE-TYPE STARS
STEWART R.T. CSIRO Radiophysics

(invited talk continues)

2.30 SST - MA2
STELLAR ANALOGUES OF SOLAR ACTIVITY: A CASE STUDY
ROBINSON R.D. AAO

2.45 SST - MA3
CHROMOSPHERES OF LATE - TYPE DWARF STARS
THATCHER J. Univ. of Sydney

3.00 SST - MA4
ATMOSPHERIC STRUCTURE OF THE PECULIAR RADIO STAR
HD 32918
BEASLEY A. Univ. of Sydney

3.15 SST - MA5
SYMBIOTIC STARS
ALLEN D.A. AAO

3.30 SST - MA6
FORMULATION OF THE EQUIVALENT NON-LTE
.... IN SOLAR SPECTRAL LINES
SALIBA G.J. IPS

3.45 SST - MA7
THE HAO ADVANCED STOKES PARAMETER.
MURPHY G.A. Univ. of Sydney

POSTER PRESENTATIONS AND REFRESHMENTS

7.30 SCIENCE POLICY WORKSHOP Mr. W. Krickler, I.R.D.B.
Prof. B. H. J. McKellar, A.R.G.S.

MONDAY AFTERNOON

SPECIALIST LECTURES

SOLAR SPACE TERRESTRIAL B

Room G25
Electrical Engineering Bldg
"Prediction Techniques"
Chair Dr. K. Lynn

2.00 SST - MA12
A COMPARISON OF HF RF PREDICTION SOFTWARE
ROBINSON G.E. IPS

2.15 SST - MA13
IONOSPHERIC LIMITATIONS TO THE ACCURACY OF
SSL RANGE ESTIMATION
MACNAMARA L.F. Andrew Antennas

2.30 SST - MA14
HIGH RESOLUTION ANGLE OF ARRIVAL MEASUREMENTS
OF HF SKY WAVES
MIDDLETON F.P. S.A.I.T.

2.45 SST - MA15
IONOSPHERIC EFFECTS ON SINGLE STATION LOCATION
OF SHORT RANGE TRANSMITTERS
JEFFREY Z. Andrew Antennas

3.00 SST - MA16
A COMPARISON OF SIMPLIFIED ALGORITHMS USED
IN SSL HFDF SYSTEMS WITH RAY TRACING THROUGH A
BAKER D.C. Univ. of Pretoria

3.15 SST - MA17
SPATIAL AND TEMPORAL FOF2 CORRELATIONS
GOODWIN G.L. S.A.I.T.

3.30 SST - MA18
THE IPS FIFTH GENERATION IONOSPHERIC MONITORING
SYSTEM
PATERSON-B. IPS

4.00

POSTER PRESENTATIONS AND REFRESHMENTS

7.30

Prof. T. F. Smith, F.A.S.T.S.,
Dr. C. Adam, C.S.I.R.O.

 4.00 POSTER PRESENTATIONS AND REFRESHMENTS

Condensed Matter Physics

- 4.00 CMP - PM10
THE EFFECTS OF STRESS ON THE PHASE TRANSFORMATION IN PSZ
FINLAYSON T.R. Monash Univ.
- 4.00 CMP - PM11
THERMAL SHOCK/INDUCED FRACTURE OF ION IMPLANTED MATERIALS
GURARIE V. R.M.I.T.
- 4.00 CMP - PM12
A SURVIVAL PROBABILITY THEORY FOR THE NUCLEATION OF GOLD ON NaCl
ROBINS J.L. Univ. of W.A.
- 4.00 CMP - PM13
APPROXIMATE DENSITY FUNCTIONAL THEORY OF A PROTON IN JELLIUM
BOFINGER D. Univ. of New England
- 4.00 CMP - PM14
COS 12; MATCHING THEORY AND EXPERIMENT
KEMISTER G. LaTrobe Univ.
- 4.00 CMP - PM15
THE PERIODIC LUC-MINDO METHOD AND ITS APPLICATION TO DIAMOND AND SILICON
SMITH P.V. Univ. of Newcastle
- 4.00 CMP - PM16
THE IMAGE POTENTIAL AND SCREENING IN THE DENSITY FUNCTIONAL METHOD
MICHALEWICZ M.T Scientific software
- 4.00 CMP - PM17
SURFACE BARRIER BOUND STATE ENERGIES FROM ELASTIC ELECTRON SCATTERING
READ M.N. Univ. of NSW
- 4.00 CMP - PM18
ON THE DISSIMILAR BIMETALLIC INTERFACES
DAS M.P. ANU
- 4.00 CMP - PM19
THE DISTORTION OF ELECTRONIC STRUCTURE AT COPPER SURFACES
CRAIG B.I. Univ. of Newcastle
- 4.00 CMP - PM1
THERMAL CONDUCTIVITY - THE AUSTRALIAN CONNECTION
WHITE G.K. CSIRO Applied Physics
- 4.00 CMP - PM2
THERMAL EXPANSION MEASUREMENTS AT NML
ROBERTS R.B. CSIRO DAP
- 4.00 CMP - PM3
THERMAL EXPANSION IN A MARTENSITIC INTI ALLOY
LIU M. Monash Univ.
- 4.00 CMP - PM4
THE LATTICE DYNAMICS OF THE ALKALI THIOCYANATES
COOKSON D.J. Monash Univ.
- 4.00 CMP - PM5
LATTICE DYNAMICS OF A- AND B- CRISTOBALITE (K=0)
HUA G.L. ANU
- 4.00 CMP - PM6
FURTHER SURPRISES ON THE FERMI-PASTA-ULAM PROBLEM
HENRY B.I. ANU
- 4.00 CMP - PM7
DEVELOPMENT OF A SLOW POSITRON SOURCE FOR SURFACE SCATTERING EXPERIMENTS
LOHMANN B. Murdoch Univ.
- 4.00 CMP - PM8
ORDERING IN BARIUM MAGNESIUM HOLLANDITES
CHEARY R.W. NSWIT
- 4.00 CMP - PM9
EFFECTS OF TEMPERATURE AND PLASTIC DEFORMATION ON THE DISLOCATION DAMPING COEFFICIENT IN KCL
BIELIG G.A. James Cook Univ.

7.30

 SCIENCE POLICY WORKSHOP Mr. W. Krieger, I.R.D.B.
Prof. B. H. J. McKellar, A.R.G.S.

 4.30 SPECIALIST LECTURES

- 4.30 SST - MA8 (INVITED)
CURRENT AND FUTURE DIRECTIONS IN SOLAR PHYSICS
SMARTT R.N. - NSO/NOAO
- (invited talk continues)
- 4.30 SST - MA9 (INVITED)
A NEW CONCEPT OF THE SOLAR CYCLE
WILSON P.R. Univ. of Sydney
- (invited talk continues)
- 5.30 SST - MA10
THE AMPLITUDE OF SOLAR CYCLE NO. 22
THOMPSON R. IPS
- 5.45 SST - MA11
SOLAR NETWORK STRUCTURE
FIEDLER R. Monash Univ.
- 5.30 SST - MA20
IONOSPHERIC OBSERVATIONS USING JINDALEE
THOMAS R.M. D.S.T.O.
- 4.45 SST - MA20
GROUP DELAY AND DOPPLER BROADENING OBSERVED IN AN HF CIRCUIT
EARL G.F.
- 5.00 SST - MA21
OBSERVATIONS OF ROUND THE WORLD PROPAGATED SIGNALS
BENNETT J.A. Monash Univ.
- 5.15 SST - MA22
EFFECTS OF IONOSPHERIC IRREGULARITIES ON OBLIQUE HF PROPAGATION
DYSON P.L. Monash Univ.
- 5.30 SST - MA23
MODELLING THE DISTANT IONOSPHERE BY BACKSCATTER INVERSION
ONG C.Y. Monash Univ.
- 5.45 SST - MA24
METEOR HEAD ECHOES OBSERVED WITH HF RADAR
THOMAS R.M. D.S.T.O.
- 6.00 SST - MA25
TRACKING THE ETA AQUARID METEOR SHOWER AT HF
THOMAS R.M. D.S.T.O.
- 4.30 SST - MA19
SOLAR SPACE TERRESTRIAL B
Room G25
Electrical Engineering Bldg
"Ionosphere and Meteor Studies using the Jindalee System"
Chair Dr. D. G. Cole
- 4.30 SST - MA11
SOLAR SPACE TERRESTRIAL A
Room G24
Electrical Engineering Bldg
"Solar Activity"
Chair Dr. C. Durrant

7.30

 Prof. T. F. Smith, F.A.S.T.S.,
Dr. C. Adam, C.S.I.R.O.

4.00 POSTER PRESENTATIONS AND REFRESHMENTS

Plasma Physics

- 4.00 PLA - PM1
PLASMA EFFECTS ON MAGNETIC FIELD RIPPLE
IN TOKOMAKS
JOHNSON J.L. Princeton Univ.
- 4.00 PLA - PM2
THE EFFECT OF THE TOROIDAL FIELD ON R.F. CURRENT
DRIVE IN A ROTAMAK
BERTRAM W.K. ANSTO
- 4.00 PLA - PM3
DRIFT WAVE INSTABILITY STUDY IN A HELIAC
SHI X.H. ANU
- 4.00 PLA - PM4
EXTERNALLY DRIVEN MODES IN THE SHEILA HELIAC
BLACKWELL B.D. ANU
- 4.00 PLA - PM5
A HELVIN-HELMHOLTZ INSTABILITY ASSOCIATED WITH
THE INTERSECTION OF 2 DISPERSION CURVES
CONWAY G.D. UMIST, Manchester
- 4.00 PLA - PM6
PLASMA FOCUS CALCULATIONS IN THE RUN DOWN PHASE
TOU T.Y. Univ. of Malaysia
- 4.00 PLA - PM7
EXPERIMENTAL STUDIES OF CURRENT DRIVE IN THE
ROTAMAK
COLLINS G.A. ANSTO

7.30

SCIENCE POLICY WORKSHOP Mr. W. Kricke, I.R.D.B.
Prof. B. H. J. McKellar, A.R.G.S.

4.00 POSTER PRESENTATIONS AND REFRESHMENTS

- 4.00 CMP - PM20
FORMATION OF GeO_2 BY HIGH DOSE OXYGEN
IMPLANTATION INTO GERMANIUM
ZHANG Q.C. Univ. of NSW
- 4.00 CMP - PM31
DIFFRACTION EQUATION FOR DIFFUSE SCATTERING
FROM DISORDERED MOLECULAR CRYSTALS
KHANNA R. ANU
- 4.00 CMP - PM32
CALCULATION OF ELASTIC CONSTANTS OF ACENAPHHTHYLENE
CRYSTAL USING ATOM ATOM POTENTIALS
HONGXING H. ANU
- 4.00 EDU - PM1
LEARNING MECHANICS CONCEPTS AND PROBLEM SOLVING
IN THE LABORATORY
SEFTON I.M. Univ. of Sydney
- 4.00 EDU - PM2
PLATO, THE EVER PRESENT TUTOR
ROBINS J. Univ. of W.A.
- 4.00 EDU - PM3
THE PHYSICS LITERACY PROJECT 1985-88
BAILEY D.E. Nepean CAE
- 4.00 EDU - PM4
VIDEO SOLUTIONS TO PHYSICS PROBLEMS
PUTT G.D. Univ. of Auckland
- 4.00 EDU - PM5
A COMPUTER BASED TUTORIAL SYSTEM FOR FIRST YEAR
STUDENTS
LEWIS D.G. Q.I.T.
- 4.00 EDU - PM6
TELEVISION IN THE INTRODUCTORY PHYSICS
LABORATORY
SYBERT J. Univ. of North Texas
- 4.00 CMP - PM21
AN IMPACT PARAMETER VIEW OF INNER SHELL
IONIZATION OF CRYSTAL ATOMS BY FAST ELECTRONS
MASLEN V.W. CSIRO Mat. Sci.
- 4.00 CMP - PM22
USE OF LOW AND MEDIUM ENERGY ION SCATTERING IN
SURFACE STRUCTURE ANALYSIS
O'CONNOR D.J. Univ. of Newcastle
- 4.00 CMP - PM23
A GUARDED KELVIN ELECTRODE TO MEASURE CHANGES
IN CONTACT POTENTIAL DUE TO GAS ABSORPTION
PIGRAM P.J. Univ. of Sydney
- 4.00 CMP - PM24
ASSESSMENT OF DAMAGE LEVELS FOR ENHANCEMENT OF
WEAR RESISTANCE ... OF GLASSY CARBON
FARRELLY M. CSIRO Materials Science
- 4.00 CMP - PM25
VARIATION OF LEED FINE STRUCTURE FROM $Cu(001)$
WITH AZIMUTH
HITCHEN G.J. Murdoch Univ.
- 4.00 CMP - PM26
INTERMOLECULAR FORCES IN ADSORBATES
MAHANTY J. ANU
- 4.00 CMP - PM27
OPTICAL TRACER DYNAMIC LIGHT SCATTERING
DAIVIS P.J. Massey Univ., N.Z.
- 4.00 CMP - PM28
ION IMPLANTATION MODIFIED SUBSTRATES FOR
BIOLOGICAL TISSUE
KELLY J.C. Univ. of NSW
- 4.00 CMP - PM29
ESTIMATION OF THEROLUMINESCENCE OF MAXIMUM
TEMPERATURE EXPOSURE OF QUARTZ-LIKE MATERIALS
MCMILLAN P.T. Univ. of NSW

7.30

Prof. T. F. Smith, F.A.S.T.S.,
Dr. C. Adam, C.S.I.R.O.

WEDNESDAY MORNING

- 8.30 PLENARY LECTURE Science Theatre
 9.15 PLENARY LECTURE Science Theatre
 10.00 Morning Tea
 10.30 SPECIALIST LECTURES

APPLIED PHYSICS

Room 27
 Physics Bldg
 "Industrial Physics"
 Chair Dr. A. Gouch

- 10.30 APH - WM1 (INVITED)
 THE APPLIED PHYSICS INDUSTRIAL PROGRAM
 LOWKE J.J. CSIRO Applied Physics

(invited talk continues)

- 11.00 APH - WM2 (INVITED)
 THE PHYSICS OF GALVANIZING STEEL
 HOBBS R.M. BHP

(invited talk continues)

- 11.30 APH - WM3 (INVITED)
 PACKAGING PHYSICS
 PADANYI Z.V. AMCOR

(invited talk continues)

- 12.00 APH - WM4
 LASER-GENERATED ULTRASOUND FOR NONDESTRUCTIVE
 EVALUATION OF SURFACES
 DOYLE P.A. A.R.L. Melbourne

- 12.15 APH - WM5
 HOLOGRAPHIC NONDESTRUCTIVE TESTING OF ROUGH
 RIGID BODIES
 LIPKIN A. Univ. of Melbourne

1.30 LUNCHTIME LECTURE

Keith Burrows Theatre

- 8.30 Prof C. H. Townes ,Nobel Prize Winner in Physics 1964
 9.15 Professor L. A. Frank, University of Iowa
 10.00 Morning Tea
 10.30 SPECIALIST LECTURES

ATOMIC/MOLECULAR PHYSICS

Hall B

Webster Bldg
 "Atoms and Molecules"
 Chair Dr. P. Burton

- 10.30 AMQ - WM1 (INVITED)
 THE EXCITATION OF THE 2S AND 2P STATES OF ATOMIC
 HYDROGEN
 WILLIAMS J.F. Univ. of W.A.

(invited talk continues)

- 11.15 AMQ - WM2 (INVITED)
 GAUSSIAN 82: WHERE TO NEXT?
 POPLÉ J.A. Carnegie-Mellon Univ.

(invited talk continues)

- 12.00 AMQ - WM3
 BOND CENTRE FUNCTIONS IN SOME VALENCE BOND
 CALCULATIONS FOR H₂- AND HE₂
 HARCOURT R.D. Univ. of Melbourne

- 12.15 AMQ - WM4
 PSEUDOPOTENTIAL CALCULATIONS FOR LI₂, NA₂ AND NAL
 ANDRIOPOLOUS M. Univ. of Newcastle

1.30

Prof. Alan Runciman, ANU

What Can Scientists Do to Stop the Nuclear Arms Race?

WEDNESDAY MORNING

- 8.30 Prof C. H. Townes ,Nobel Prize Winner in Physics 1964
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BIOPHYSICS

Keith Burrows Theatre
 Physics Bldg
 "Ion Channels and Electrical
 Properties of Membranes"
 Chair Prof H. G. L. Coster

- 10.30 BIO - WM1
 KINETIC PROPERTIES OF ION CHANNELS AND
 ION PUMPS
 LAUGER P.

11.30 BIO - WM2

PATCH CLAMP STUDIES OF THE K⁺ CHANNEL IN
 CYTOPLASMIC DROPS FROM CHARA AUSTRALIS
 LAVER D.R. Univ. of Sydney

11.45 BIO - WM3

A MULTISTATE ION CHANNEL IN THE PLASMALEMMMA OF
 CELLS OF THE HIGHER PLANT AMARANTHUS TRICOLOR
 ELLIOTT Flinders Univ.

12.00 BIO - WM4

THE POTASSIUM PORTER OF THE CHARA PLASMALEMMMA-....
 SMITH F.A. Univ. of Adelaide

12.15 BIO - WM5

THE CONDUCTANCE OF THE TONOPLAST IN CHARA
 SMITH J.R. Univ. of NSW

WEDNESDAY MORNING

- 8.30 PLENARY LECTURE Science Theatre
 9.15 PLENARY LECTURE Science Theatre
 10.00 Morning Tea

SPECIALIST LECTURES

- CONDENSED MATTER PI**
 Theatre LG1
 Electrical Engineer
 "High Tc Supercondu
 Chair Prof. P. P. Fish
- 10.30 CMP - WM1 (INVITED)
 CURRENT VIEWS OF HIGH TEMPERATURE
 SUPERCONDUCTIVITY
 ASHCROFT N.W. Cornell Univ.

(invited talk continues)

- 11.00 CMP - WM2
 SOFT X RAY EMISSION FROM A YBA2CU3O7 SUPERCOND
 R
 CRISP R.S. Univ. of M.A.

- 11.15 CMP - WM3
 JOSEPHSON TUNNELLING IN HIGH TC SUPERCONDUCTORS
 BOWDEN G.J. UNSW

- 11.30 CMP - WM4
 OXYGEN CONTENT AND ORDERING IN YBA2CU3O7:
 THEORY AND EXPERIMENT
 BELL J.M. CSIRO Applied Physics

- 11.45 CMP - WM5
 IMPURITY AND THERMODYNAMIC EFFECTS ON
 SUPERCONDUCTING PROPERTIES OF YBA2CU3O7
 DOU S.X. UNSW

- 12.00 CMP - WM6
 LOW FREQUENCY ELECTRICAL NOISE IN HIGH TC
 SUPERCONDUCTING MATERIALS
 RICKETTS B.W. CSIRO Applied Physics

- 12.15 CMP - WM7
 THE ENHANCEMENT OF TC IN YBACU SUPERCONDUCTORS
 BY THE ABSORPTION OF GAS
 MATTHEWS D.N. Univ. of NSW

1.30

LUNCHTIME LECTURE

Keith Burrows Theatre

WEDNESDAY MORNING

- 8.30 Prof C. H. Townes ,Nobel Prize Winner in Physics 1964
 9.15 Professor L. A. Frank, University of Iowa
 10.00 Morning Tea
 10.30 SPECIALIST LECTURES

GASEOUS ELECTRONICS

- Dwyer Theatre
 Chemistry Bldg
 "Swarms I "
 Chair Dr. J. J. Lowke
- 10.30 GEM - WM1 (INVITED)
 ARC PHYSICS IN HIGH INTENSITY DISCHARGE LAMPS
 WAYMOUTH J.F. GTE

(invited talk continues)

- 11.15 GEM - WM2
 HYDRODYNAMIC DESCRIPTION OF ELECTRON FLOW
 IN A STRONG ELECTRIC FIELD
 ROUMELITIS G. Univ. of Sydney

- 11.30 GEM - WM3
 TRANSPORT PROPERTIES OF ELECTRONS IN WATER
 VAPOUR
 NESS K.F. James Cook Univ.

- 11.45 GEM - WM4
 THE STRUCTURE OF TOWNSEND DISCHARGES
 BLEVIN H.A. Flinders

- 12.00 GEM - WM5
 SOLUTIONS OF THE CONTINUITY EQUATION RELEVANT
 TO THE TOWNSEND-HUXLEY EXPERIMENT
 KUMAR K. ANU

- 12.15 GEM - WM6
 THE ENERGY DISTRIBUTION FUNCTION OF ELECTRON
 SWARMS
 GARVIE A. Flinders Univ

- 12.30 GEM - WM7
 THE FOUNDATIONS OF GASEOUS ELECTRONICS
 FRANCEY J.L Monash Univ.

1.30

Prof. Alan Runciman, ANU

What Can Scientists Do to Stop the Nuclear Arms Race?

MSM WAVES

- Nyholm Theatre
 Chemistry Bldg
 "MSM Sources "
 Chair Dr. I. Falconer
- 10.30 MSM - WM1 (INVITED)
 MSM RESEARCH AT THE UNIV. OF QLD
 HECKENBERG N.R. Univ. of Qld

(invited talk continues)

- 11.00 MSM - WM2 (INVITED)
 TOWARDS HIGH VOLUMETRIC AND QUANTUM EFFICIENCY
 IN OPTICALLY PUMPED SUBMILLIMETRE LASERS
 WHITBOURN L.B. CSIRO Min. Phys.

(invited talk continues)

- 11.30 MSM - WM3 (INVITED)
 NEAR MILLIMETRE AND SUBMILLIMETRE WAVE RESEARCH
 AT NPL
 BIRCH J.A. NPL, Teddington

(invited talk continues)

- 12.00 MSM - WM4
 RISING SUN MAGNETRON AS A MM WAVE SOURCE IN
 THE K-BAND
 TRAN V.N. Deakin Univ.

- 12.15 MSM - WM5
 RAPIDLY TUNED CO2 LASER MID-INFRARED REMOTE
 SENSING SYSTEM
 WHITBOURN L.B. CSIRO Min. Phys.

WEDNESDAY MORNING

- 8.30 PLENARY LECTURE
Science Theatre
- 9.15 PLENARY LECTURE
Science Theatre
- 10.00 Morning Tea
- 10.30 SPECIALIST LECTURES

NUCLEAR/PARTICLE PHYSICS

Hall A
Webster Bldg
"Nuclear Physics: Prospects,
Problems and Applications"
Chair Dr. J. Boldeman

- 10.30 NUP - WM1 (INVITED)
TRACING OF GROUNDWATER WITH A 14MV TANDEM
ACCELERATOR
FIFIELD L.K. A.N.U.
(invited talk continues)

- 11.00 NUP - WM2 (INVITED)
CP VIOLATION IN NUCLEAR AND PARTICLE PHYSICS
MCKELLAR B.H. Univ. of Melbourne
(invited talk continues)

- 11.30 NUP - WM3
STUDIES OF LIGHT, PROTON-RICH NUCLEI
WOODS C.L. A.N.U.

- 11.45 NUP - WM4
LIGHT NEUTRON-RICH NUCLEI: MASS AND EXCITED STATE
MEASUREMENTS
CATFORD W.N. A.N.U.

- 12.00 NUP - WM5
A NEW APPROACH TO MUON CATALYSED NUCLEAR FUSION
KEMENY L.G. Univ. of NSW

- 12.15 NUP - WM6 (INVITED)
DIRECTIONS IN NUCLEAR PHYSICS
SPICER B.M. Univ. of Melbourne
(invited talk continues)

- 1.30 LUNCHTIME LECTURE

Keith Burrows Theatre

WEDNESDAY MORNING

- 8.30 Prof C. H. Townes ,Nobel Prize Winner in Physics 1964
- 9.15 Professor L. A. Frank, University of Iowa
- 10.00 Morning Tea
- 10.30 SPECIALIST LECTURES

SOLAR SPACE TERRESTRIAL A

Room G24
Electrical Engineering Bldg
"Cosmic Ray Workshop"
Chair A/Prof L. Peak

- 10.30 SST - WM1
SEARCH FOR HIGH ENERGY X RAY AND GAMMA RAY
EMISSION IN THE EARLY PHASE OF SUPENOVA 1987A
SOOD R. A.D.F.A.

- 10.45 SST - WM2
PHOTON - PHOTON PAIR PRODUCTION AND THE OPACITY
OF SN1987A TO TEV AND PEV GAMMA RAYS
PROTHEROE R.J. Univ. of Adelaide

- 11.00 SST - WM3
SEARCH FOR ULTRA HIGH ENERGY GAMMA RAYS FROM
SN1987A
CIAMPA D. Univ. of Adelaide

- 11.15 SST - WM4
GAMMAS FROM SN1987A; THE JANZOS EXPERIMENT
HUMBLE J.E. Univ. of Tasmania

- 11.30 SST - WM5
DESIGN AND CONSTRUCTION OF U. OF ADELAIDE
CENTENNIAL GAMMA RAY TELESCOPE
GREGORY A.G. Univ. of Adelaide

- 11.45 SST - WM6
OBSERVED NEUTRINO EMISSION FROM SN1987A
PEAK L.S. Univ. of Sydney

SOLAR SPACE TERRESTRIAL B

Room G25
Electrical Engineering Bldg
"Ionospheric and
Magnetic Behaviour"
Chair Prof. J. D. Whitehead

- 10.30 SST - WM7 (INVITED)
THE WORLD IONOSPHERE-THERMOSPHERE STUDY
COLE K.D. La Trobe Univ.

(invited talk continues)

- 11.15 SST - WM8
SOME PRELIMINARY RESULTS OF A STUDY OF THE
ELECTRON CONTENT OF THE IONOSPHERE
HIBBERD F.H. UNE

- 11.30 SST - WM9
FORECASTING TOTAL ELECTRON CONTENT
PATTERSON G. IPS

- 11.45 SST - WM10
POST SUNSET BEHAVIOUR OF THE F2 REGION MIDLATITUDE
IONOSPHERE
SCALI J.L. LaTrobe Univ.

- 12.00 SST - WM11
RECURRENT GEOMAGNETIC STORMS
WILKINSON P.J. IPS

- 1.30 Prof. Alan Runciman, ANU
What Can Scientists Do to Stop the Nuclear Arms Race?

WEDNESDAY AFTERNOON

2.00 SPECIALIST LECTURES

APPLIED PHYSICS

Room 27
Physics Bldg
"New Technology"
Chair Mr. I. Fraser

ASTROPHYSICS/OPTICS

Murphy Theatre
Chemistry Theatre
"Astronomical Instrumentation"
Chair Prof. E. Wolf

2.00 APH - WA1 (INVITED)
NEW DEVELOPMENTS IN FIBRE OPTICS

RASHLEIGH S.C. Aust Opt. Fibre Res.

(invited talk continues)

2.30 APH - WA2 (INVITED)
BROADBAND OPTOELECTRONICS
PRICE G.L. Telecom

(invited talk continues)

3.00 APH - WA3 (INVITED)
SUPERCONDUCTING CERAMICS TECHNOLOGY
ALEXANDER S. Silicon Tech. Aust.

(invited talk continues)

3.30 APH - WA4
A PLANAR SOURCE AND DETECTOR TECHNOLOGY
DELL J.M. Telecom

3.45 APH - WA5
PZT/POLYMER ULTRASONIC COMPOSITE TRANSDUCERS
UNSWORTH J. Macquarie Univ.

2.00 AST - WA1 (INVITED)

SUSI - THE NEW SYDNEY UNIVERSITY STELLAR
INTERFEROMETER
DAVIS J. Univ. of Sydney

(invited talk continues)

2.45 AST - WA2
PHOTON COUNTING AND IMAGING IN ASTRONOMY
VAN HARMELAN J. Mt Stromlo SSO

3.00 AST - WA3
THE TAURUS II IMAGING INTERFEROMETER
TAYLOR K. AAO

3.15 AST - WA4
ASTRONOMY WITH FLAIR
WATSON F.G. AAO

3.30 AST - WA5
SUPERNOVA INSTRUMENTATION ON THE ANGLO-AUSTRALIAN
TELESCOPE
GILLINGHAM P. Anglo Australian Obs.

3.45 AST - WA6
THE AUTOMATED PATROL TELESCOPE
MITCHELL P. Univ. of NSW

4.00 AST - WA7
LYMAN SPACE MISSION INSTRUMENTATION
WATERMORTH M.D. Univ. of Tasmania

4.00 POSTER PRESENTATIONS AND REFRESHMENTS

7.00 CONFERENCE DINNER Galaxy Room, AJC Randwick

WEDNESDAY AFTERNOON

2.00 SPECIALIST LECTURES

ATOMIC/MOLECULAR PHYSICS

Hall B
Webster Bldg
"Molecular Ionisation"
Chair Prof. F. P. Larkins

2.00 AMQ - WA1 (INVITED)

DE-EXCITATION SPECTROSCOPY OF CORE-EXCITED
MOLECULES USING THE E-E COINCIDENCE TECHNIQUE
DARRAH-THOMAS T Oregon State Univ.

(invited talk continues)

2.45 AMQ - WA2 (INVITED)
MANY-BODY EFFECTS IN IONIZATION
CEDERBAUM L.S. Universitat Heidelberg

(invited talk continues)

3.30 AMQ - WA3
SEMIEMPIRICAL APPROACH TO THE PREDICTION OF
MOLECULAR AUGER SPECTRA
LARKINS F.P. Univ. Tasmania

3.45 AMQ - WA4
STABLE HELIUM CONTAINING MULTIPLY CHARGED CATIONS
MING W.H. ANU

4.00 AMQ - WA5
THE KR I LIKE ATOMIC IONS
CHAGHTAI M.S. AMU Alagarh

4.15 AMQ - WA6
ENHANCEMENT OF FOUR WAVE MIXING BY QUANTUM
MECHANICAL INTERFERENCE
CHAPPLE P. ANU

BIOPHYSICS

Keith Burrows Theatre
Physics Bldg
"Cellular Biophysics and
Electrophysiology"
Chair Dr. Alan Walker

2.00 BIO - WA1

PLANT CELL COMPRESSIBILITIES
RITMAN K.T. Univ. of N.E.

2.15 BIO - WA2

THE MOTION AND DEFORMATION OF CELLS IN
NONUNIFORM ELECTRIC FIELDS
BARNABY E. Univ. of NSW

2.30 BIO - WA3

STUDIES OF THE SEDIMENTATION OF HUMAN BLOOD
HUNG W.T. CSIRO Applied Physics

2.45 BIO - WA4

CLINICAL INFORMATION ON ERYTHROCYTE
DEFORMABILITY VIA SOUND ABSORPTION MEASUREMENTS
ARTHUR G.J. Univ. of NSW

3.00 BIO - WA5

OPTICAL PERFORMANCE IN ARTHROPOD COMPOUND
EYES FROM DIFFERENT LUMINOUS HABITATS
WARRANT E.J. A.N.U.

3.15 BIO - WA6

THE ULTRASTRUCTURE OF THE CYTOPLASM-ENRICHED
CELL FRAGMENTS OF CHARA
BEILBY M.J. Univ. of

3.30 BIO - WA7

MEMBRANE POTENTIAL OF RED CELLS MEASURED BY 31P
NMR SPECTROSCOPY
KIRK K. Univ. of Sydney

3.45 BIO - WA8

ELECTRICAL CHARACTERIZATION OF THE STATIC
CYTOPLASM, PLASMA MEMBRANE COAT AND PLASMALEMMAISON
CHILCOTT T.C. Univ. of NSW

4.30 BIO - WA9

EXPLORING THE CONDUCTANCE OF CHARA PLASMALELLA
AT DEPOLARIZED P.D.'S
BEILBY M.J. Univ. of Sydney

4.45 BIO - WA10

DIRECT MEASUREMENT OF CELL DETACHMENT FORCES
FISHER L.R. CSIRO Food Research

2.00 SPECIALIST LECTURES

CONDENSED MATTER PHYSICS
Theatre LG1
Electrical Engineering Bldg
"High Tc Superconductors II"
Chair Prof. T. Smith

2.00 CMP - WA1 (INVITED)
HIGH TC SUPERCONDUCTORS: PAST, PRESENT AND FUTURE
RUSSEL G.J. UNSW

(invited talk continues)

2.30 CMP - WA2
ELECTRONIC AND THERMAL TRANSPORT IN HIGH
TC SUPERCONDUCTORS
KAISER A.B. Max Planck Institut, Stuttgart

2.45 CMP - WA3
THE FERMILOGY OF LA(2-X)M(X)CUO4 SUPERCONDUCTORS
NORMAN P.D. Chisholm I.T.

3.00 CMP - WA4
DIFFUSE NEUTRON SCATTERING EXPERIMENTS ON
HIGH TC SUPERCONDUCTORS
FANG T. Monash

3.15 CMP - WA5
EFFECT UPON COMPOSITION AND OXYGEN CONTENT
ON HIGH TC SUPERCONDUCTORS
STEWART A.M. ANU

3.30 CMP - WA6
HIGH TEMPERATURE SUPERCONDUCTORS: SOME
PHENOMENOLOGY
DAS M.P. R.S.Phys. S., ANU

3.45 CMP - WA7
HARDNESS AND STABILITY OF HIGH-TC SUPERCONDUCTORS
HARRIS L.B. Univ. of N.S.W.

4.00

POSTER PRESENTATIONS AND REFRESHMENTS

7.00

CONFERENCE DINNER Galaxy Room, AJC Randwick

2.00 SPECIALIST LECTURES

GASEOUS ELECTRONICS
Dwyer Theatre
Chemistry Bldg
"Swarms II"
Chair Prof. H. Blevin

GRAVITATION
Mellor Theatre
Chemistry Bldg
"Gravitation and
Related Problems"
Chair

2.00 GEM - WA1
ELECTRON COLLISION CROSS-SECTIONS FOR ELASTIC
COLLISIONS AND ELECTRON SWARM PARAMETERS ...
HAYASHI M. Nagoya I.T., Japan

2.15 GEM - WA2
THE DETERMINATION OF THE KR MOMENTUM TRANSFER
CROSS SECTION FROM ELECTRON DRIFT VELOCITIES
ENGLAND J.P. A.N.U.

2.30 GEM - WA3
THE TEMPERATURE DEPENDENCE OF THE ATTACHMENT
OF THERMAL ELECTRONS TO CFCL3
CROMPTON R.W. ANU

2.45 GEM - WA4
EXACT ANALYSIS OF ELECTRON TRANSPORT UNDER
ELECTRIC FIELD BY FLIGHT TIME INTEGRAL METHOD
IKUTA N. Tokushima Univ., Japan

3.00 GEM - WA5
MONTE-CARLO SIMULATION OF ELECTRON THERMALIZATION
IN RARE GASES
PORTER L.A. Univ. of Melbourne

3.15 GEM - WA6
THERMALIZATION OF ENERGETIC ELECTRONS IN RARE
GASES
CHEUNG B. Univ. of Melbourne

3.30 GEM - WA7
TEMPERATURE AND PRESSURE EFFECTS ON THE E-ION
RECOMBINATION RATES IN RARE GASES ...
NG Y.L. Univ. of Melbourne

3.45 GEM - WA8
THE AMODE BOUNDARY REGION OF TOWNSEND DISCHARGES
KELLY L.J. Flinders Univ.

4.00 GEM - WA9
COLLISIONAL DESTRUCTION OF H2(C3PIU)
METASTABLES BY H2
WEDDING A.B. JILA

4.15 GEM - WA10
STUDY OF VOLTAGE TRANSIENTS FROM PULSED
TOWNSEND DISCHARGES
PURDIE P.H. Flinders Univ.

2.00 GRA - WA1
CORRELATIONS AND NOISE REDUCTION FOR ARRAYS OF
RESONANT BAR GRAVITATIONAL ADIATION ANTENNAS
BLAIR D Univ. of W.A.

2.30 GRA - WA2
THE UWA GRAVITATIONAL RADIATION ANTENNA
VEITCH P. Univ. of W.A.

3.00 GRA - WA3
PARAMETRIC EFFECTS IN THE UWA GRAVITATIONAL WAVE
ANTENNA
LINTHORNE N.P. Univ. of W.A.

3.15 GRA - WA4
DEVELOPMENT OF AN ULTRALOW NOISE TUNABLE
MICROWAVE SOURCE
RAMM D.K. Univ. of W.A.

3.30 GRA - WA5
A PHASE STABILIZED LOOP OSCILLATOR BASED ON A
SAPPHIRE LOADED SUPERCONDUCTING CAVITY RESONATOR
JONES S.K. Univ. of W.A.

3.45 GRA - WA6
FREQUENCY CONTROL SYSTEM FOR ULTRASTABLE
OSCILLATOR
GILES A. Univ. of W.A.

WEDNESDAY AFTERNOON

2.00 SPECIALIST LECTURES

MSM WAVES/PLASMA

Nyholm Theatre
Chemistry Bldg
"MSM Plasma Diagnostics"
Chair Dr. B. James

2.00 MSM - WA1 (INVITED)
MILLIMETRE AND SUBMILLIMETRE WAVE DIAGNOSTICS AT
JET
CAMPBELL D.J. JET

(invited talk continues)

2.30 MSM - WA2 (INVITED)
ELECTRON CYCLOTRON EMISSION MEASUREMENTS ON JET
BARTLETT D.V. JET

(invited talk continues)

3.00 MSM - WA3 (INVITED)
THE EFFECTS OF DIFFRACTION BY PLASMA FLUCTUATIONS
ON THE PHASE AND INTENSITY OF A PROBING CO₂ LASER
SHARP L.E. ANU

(invited talk continues)

3.30 MSM - WA4 (INVITED)
GYROTRON APPLICATIONS TO PLASMA PHYSICS
BRAND G.F. Univ. of Sydney

(invited talk continues)

4.00 MSM - WA5
FAR FORWARD SCATTERING OF A SUM-MM LASER
FROM DENSITY FLUCTUATIONS
BOWDEN M.D. Univ. of Sydney

4.15 MSM - WA6
TWO DIMENSIONAL IMAGING INTERFEROMETRY AND
TOMOGRAPHY ON A TOKAMAK PLASMA
HOWARD J. ANU

4.00

POSTER PRESENTATIONS AND REFRESHMENTS

7.00

CONFERENCE DINNER Galaxy Room, AJC Randwick

WEDNESDAY AFTERNOON

2.00 SPECIALIST LECTURES

SOLAR SPACE TERRESTRIAL A

Room G24
Electrical Engineering Bldg
"Cosmic Ray Workshop"
Chair Prof J. Prescott

2.00 SST - WA1
HIGHLIGHTS OF THE 20TH INTERNATIONAL COSMIC
RAY CONFERENCE (MOSCOM)
PRESCOTT J. Univ. of Adelaide

2.15 SST - WA2
GAMMA RAY ASTRONOMY AT ENERGIES ABOVE 0.3 TEV
PROTHEROE R.J. Univ. of Adelaide

2.30 SST - WA3
PRELIMINARY RESULTS FROM THE BROKEN HILL
UNDERGROUND RESEARCH LABORATORY
BAKICH A.M. Univ. of Sydney

2.45 SST - WA4
FIRST RESULTS FROM THE SYDNEY UNIVERSITY AIR
SHOWER CORE EXPERIMENT
BRAUDAKIS G. Univ. of Sydney

3.00 SST - WA5
COSMIC RAY ENHANCED DIURNAL VARIATIONS - NEUTRON
MONITOR AND UNDERGROUND OBSERVATIONS
HUMBLE J.E. Univ. of Tasmania

3.15 SST - WA6
PRESENT AND FUTURE COSMIC RAY RESEARCH OF THE
ANTARCTIC DIVISION
DULDIG M.L. Antarctic Division

SOLAR SPACE TERRESTRIAL B

Room G25
Electrical Engineering Bldg
"Ionospheric Irregularities I"
Chair Dr. B. Ward

2.00 SST - WA7 (INVITED)
REVIEW: REMOTE SENSING OF THE ATMOSPHERE WITH
DIGITAL IONOSPHERIC SOUNDERS
TEDD B.L. La Trobe Univ.

(invited talk continues)

2.30 SST - WA8
SMALL SCALE STRATIFICATION IN THE DAYTIME
ATMOSPHERE
BOWMAN G.G. Univ. of Queensland

2.45 SST - WA9
MID-LATITUDE SPREAD-F STRUCTURE
MEEHAN D.H. Univ. of Queensland

3.00 SST - WA10
FADING STATISTICS OF SPREAD F SIGNALS
SCALI J.L. La Trobe Univ.

3.15 SST - WA11
DETECTING IONOSPHERIC STRUCTURES AND MOTION
USING THE DIGISONDE 256
JOHNSTON D.L. La Trobe

3.30 SST - WA12
HF IONOSPHERIC WAVEGUIDES
PLATT I.G. La Trobe Univ.

4.00

POSTER PRESENTATIONS AND REFRESHMENTS

7.00

Speaker Prof. Robert Hanbury-Brown

WEDNESDAY AFTERNOON

4.30 SPECIALIST LECTURES

SOLAR SPACE TERRESTRIAL B

Room G25

Electrical Engineering Bldg
 "Ionospheric Irregularities II"
 Chair Dr. P. Dyson

4.30 SST - WA13

THE EFFECTS OF NON-LINEARITIES IN TYPE 1 (TWO
 STREAM) IRREGULARITIES IN THE IONOSPHERE
 WHITEHEAD J.D. Univ. of Queensland

4.45 SST - WA14

AURORAL RADAR VELOCITIES-A COMPARISON OF MEAN
 VELOCITY AND THAT OF LARGER LIVED IRREGULARITIES
 WHITEHEAD J.D. Univ. of Queensland

5.00 SST - WA15

JOINT VHF COHERENT RADAR AND DIRECTIONAL
 IONOMONDE MEASUREMENTS OF PLASMA WAVES.....
 NIELSEN E. M.P.I for Aeronomie

5.15 SST - WA16

VHF RADAR OBSERVATIONS OF THE WINDS AND
 BACKSCATTERING REGIONS IN THE MESOSPHERE ...
 REID I.M. MPI for Aeronomie

5.30 SST - WA17

EFFECTS OF SPORADIC-E ON F-REGION ECHOES
 BARNES R. Univ. of Queensland

5.45 SST - WA18

SCALAR POTENTIAL METHODS IN ELECTRODYNAMICS
 AND PLASMA PHYSICS
 WEIGLHOFFER W. Univ. of Adelaide

7.00

Speaker Prof. Robert Hanbury-Brown

WEDNESDAY POSTER

4.00 POSTER PRESENTATIONS AND REFRESHMENTS

Applied Physics

4.00 APH - PW1

ANALYSIS OF IRON ORE BY LASER-INDUCED BREAKDOWN
 SPECTROSCOPY

GRANT K.J. UNSW

4.00 APH - PW2

RELATING OPTICAL AND DIELECTRIC PROPERTIES OF
 MINERAL OILS

HAUSER N. Macquarie Univ.

4.00 APH - PW3

A NEW DETERMINATION OF R, THE UNIVERSAL GAS
 CONSTANT, FROM SPEED OF SOUND MEASUREMENTS
 MODOVER M.R. NBS

4.00 APH - PW4

A POCKET SIZE TEMPERATURE DATALOGGER USING
 THERMISTORS AND A PROGRAMMABLE POCKET CALCULATOR
 MUKHERJEE R. Univ. of Stdney

4.00 APH - PW5

MOSSBAUR AND X-RAY DIFFRACTION STUDIES APPLIED
 TO CENTRAL QUEENSLAND COALS
 PAX R.A. Capricornia I.A.E.

4.00 APH - PW6

NOVEL MICROSPHERES MAY SOLVE MAGNETIC
 SEPARATION PROBLEM
 RICHARDS A.J. NSWIT

4.00 APH - PW7

ACOUSTIC EMISSION MONITORING OF A MIRAGE
 AIRCRAFT
 SCALA P.M. A.R.L., Melbourne

7.00

Speaker Prof. Robert Hanbury-Brown

WEDNESDAY POSTER

4.00 POSTER PRESENTATIONS AND REFRESHMENTS

Biophysics

4.00 BIO - PW1
MEASUREMENT OF CYTOPLASMIC PH IN CHARAPHYTES
REID R.J. Univ. of Adelaide

Condensed Matter Physics

4.00 CMP - PW1
PREPARATION AND PROPERTIES OF YBA2CU3O7
(R=Y, LA(1-X)Y(X), ND, SM, EU)
DRIVER R. CSIRO Applied Physics

4.00 CMP - PW2
FABRICATION OF SUPERCONDUCTING THIN FILMS
OF YBA2CU3O7
PUZZER T. Univ. of NSW

4.00 CMP - PW3
HIGH PERFORMANCE YBA2CU3O7 AT TC > 100K
TAYLOR K.N. Univ. of NSW

4.00 CMP - PW4
EVIDENCE FOR PROXIMITY EFFECTS IN AN INHOMOGENEOUS
Y-BA-CU-O SUPERCONDUCTOR
FERREIRINHO J., A.D.F.A., UNSW

4.00 CMP - PW5
EFFECTS OF THE ALKALI AND ALKALINE-EARTH DOPANTS
ON SUPERCONDUCTIVITY IN YBA2CU3O7
DOU S.X. UNSW

4.00 CMP - PW6
EXAGGERATED GRAIN GROWTH AND IMPROVED PROPERTIES
BY PT ADDITION IN YBA2CU3O7
DOU S.X. UNSW

4.00 CMP - PW7
STABILIZATION OF ORTHORHOMBIC PHASE IN YBA2CU3O7
BY DOPANTS
DOU S.X. UNSW

4.00 CMP - PW8
VANADIUM SUBSTITUTION INTO YBA2CU3O7
BOSI S. Univ. of NSW

4.00 CMP - PW9
INFLUENCE OF THE SURFACE TREATMENT ON A 1-2-3
SUPERCONDUCTOR
WANG R. Massey Univ.

4.00 CMP - PW10
ELASTIC PROPERTIES OF THE HIGH TC SUPERCONDUCTOR
YBA2CU3O7
STAINES M.P. DSIR, NZ

4.00 CMP - PW11
INDUCED IR MODES ASSOC. WITH INCREASED OXYGEN
DEFICIENCIES IN YBA2CU3O7
SUN H.B. Univ. of NSW

4.00 CMP - PW12
FTIR SPECTRA OF WARM SUPERCONDUCTORS AND
RELATED MATERIALS
MCNAMARA P. Telecom

4.00 CMP - PW13
THERMOPHYSICAL PROPS. OF MATERIALS IN THE
YXBA(1-X)CUOY PHASE DIAGRAM
HUNTER B. Univ. of NSW

4.00 CMP - PW14
AUGER SPECTROSCOPY OF YBA2CU3O7 AND Y2BA3CU5O9
SUPERCONDUCTORS
RUSSEL G.J. Univ. of N.S.W.

4.00 CMP - PW15
THE EFFECTS OF OXIDATION AND REDUCTION ON THE
X RAY PHOTOELECTRON SPECTRA OF YBA2CU3O7-8
HEALY P.C. Griffith Univ.

4.00 CMP - PW16
MEASUREMENT OF HCL FOR YBA2CU3O7(7-X)
SUPERCONDUCTORS
MAIR R.H. Monash Univ.

4.00 CMP - PW17
MAGNETIC FLUX INTRUSION IN YBA2CU3O7 AT LOW FIELDS
FREEMAN T.E. Macquarie Univ.

4.00 CMP - PW18
MAGNETIC SHIELDING PROPERTIES OF HIGH TC
SUPERCONDUCTORS
MACFARLANE J.C. CSIRO Applied Physics

7.00 CONFERENCE DINNER

Galaxy Room, AJC Randwick

WEDNESDAY POSTER

4.00 POSTER PRESENTATIONS AND REFRESHMENTS

4.00 CMP - PW19
TC, BC, AND JC FOR YBA2CU3O7
FINLAYSON T.R. Monash Univ.

4.00 CMP - PW20
MODEL OF EXCIMER LASER ABLATION OF METALS
RUSSELL C.J. Univ. of NSW

Nuclear/Particle

4.00 NUP - PW1
SPECTROSCOPY OF HIGH-SPIN STATES IN ²¹³Rn AND
CONFIGURATION MIXING
STUCHBERY A.E. A.N.U.

4.00 NUP - PW2
RESONANT STRUCTURE IN THE ¹⁶O + ²⁰Ne REACTION
HEBBARD D.F. A.N.U.

4.00 NUP - PW3
ANISOTROPIES IN TRANSFER INDUCED FISSION OF
¹⁶O + ²³²Th AT NEAR BARRIER ENERGIES
LESTONE J.P. A.N.U.

4.00 NUP - PW4
MEASUREMENT OF THE QUADRUPOLE MOMENT OF THE FIRST
EXCITED STATE OF ¹⁹²Os
LIM C.S. A.N.U.

4.00 NUP - PW5
PULSED BEAM LIFETIME MEASUREMENTS IN ²¹⁶Ra
²¹⁷Ra AND E2 STRENGTHS IN THE TRANS-LEAD REGION
REISS F. LMU, Germany

*4.00 NUP - PW6
THE ¹³C(p,p') REACTION
IRLICH L.S. Univ. of Melbourne

*4.00 NUP - PW7
THE ¹⁰B(p,p') REACTION AT 200 MEV
LEWIS P.R. Univ. of Melbourne

4.00 NUP - PW8
BORN-ADWA ANALYSIS OF CHARGE EXCHANGE REACTIONS
PERFORMED AT TRIUMF
LONG S. Univ. of Melbourne

4.00 NUP - PW9
CROSS SECTIONS OF ALPHA PARTICLE INDUCED REACTIONS
ON ⁴⁸Ti
MORTON A.J. Univ. of Melbourne

4.00 NUP - PW10
CROSS SECTION MEASUREMENTS OF ALPHA PARTICLE
INDUCED REACTIONS ON ⁵⁴Fe
TIMS S.G. Univ. of Melbourne

4.00 NUP - PW11
LOW ENERGY PRODUCTION OF PIONS BY LASER INDUCED
HYPERFINE QUADRUPOLE INTERACTIONS IN HEAVY NUCLEI
KEMENY L.G. Univ. of NSW

Optics

4.00 OPT - PW1
FOLDED OPTICAL SYSTEMS FOR A/O SIGNAL PROCESSORS
BROWN M.S. ERL, DSTO

4.00 OPT - PW2
AUTOMATIC ADJUSTMENT OF HOLOGRAPHIC AND
INFORMATION MEASURING SYSTEMS
LIPKIN A. Univ. of Melbourne

4.00 OPT - PW3
OPTICAL ASPECTS OF AN AIRBORNE MULTISPECTRAL
SCANNING SPECTROMETER
SMITH G. Fairey Aviation

4.00 OPT - PW4
A NEW SPECTROMETER ACCESSORY THAT MEASURES
ABSOLUTE SPECULAR REFLECTANCE
PORTER C. Varian Techtron

4.00 OPT - PW5
CURVE FITTING TECHNIQUES IN HIGH RESOLUTION
EMISSION AND ABSORPTION SPECTROSCOPY
NICOL J.L. James Cook Uni.

7.00

Speaker Prof. Robert Hanbury-Brown

 4.00 POSTER PRESENTATIONS AND REFRESHMENTS

- 4.00 SST - PW8
THE MACQUARIE ISLAND OBSERVATORY
BURNS G. Antarctic Divn.
- 4.00 SST - PW9
GEOLOGICAL STRUCTURE AND GEOMAGNETIC VARIATIONS
IN SOUTH AUSTRALIA
MILLIGAN P.R. Bureau Mineral Resources
- 4.00 SST - PW10
EVIDENCE OF PHASE IRREGULARITIES IN PC3-4
PULSATIONS ACROSS AN AZIMUTHAL-ARRAY.
OSTWALD P.M. Univ. of Newcastle
- 4.00 SST - PW11
PC3,4 GEOMAGNETIC PULSATIONS AT VERY LOW LATITUDE
CONJUGATE STATIONS
FENG A.Q. Univ. of Newcastle
- 4.00 SST - PW12
EFFECTS OF ANISOTROPIC ION BEAMS ON LINEAR EM
ION CYCLOTRON INSTABILITY: ANALYTIC RESULTS
HU Y.D. Univ. of Newcastle
- 4.00 SST - PW13
ES OCCURRENCE CHARACTERISTICS FROM SOUTH PACIFIC
IONOSONDE DATA
BAGGLEY H.J. Univ. of Canterbury
- 4.00 SST - PW14
ON THE OCCURRENCE OF VHF AND UHF SCINTILLATIONS...
RAMA RAO P.V. Andhra Univ.
- 4.00 SST - PW15
STUDY OF ELECTRON CONTENT DEPLETIONS
RAMA RAO P.V. Andhra Univ.

 7.00 Speaker Prof. Robert Hanbury-Brown

 4.00 POSTER PRESENTATIONS AND REFRESHMENTS

- 4.00 OPT - PW6
PREIONIZED METAL VAPOUR JET FOR A ROOM TEMP.
METAL VAPOUR LASER
HARVEY E.C. Monash Univ.
- 4.00 OPT - PW7
SIMULTANEOUS STABILIZATION OF THREE WAVELENGTHS
IN A METAL-VAPOUR LASER
WARD B.K. CSIRO Applied Physics
- 4.00 OPT - PW8
A SCATTERING VISIBILITY GAUGE
CLARK B.A. A.R.L.
- 4.00 OPT - PW9
1.3 MICRON INGAAS/GAAS QUANTUM WELL SEMICONDUCTOR
LASERS/LEDS
KEMENY P.C. Telecom
- 4.00 OPT - PW10
THE DESIGN OF A CO₂ HETERODYNE INTERFEROMETER
FOR MEASURING LONG-DISTANCES.
BROWN N. CSIRO Applied Physics
- 4.00 OPT - PW11
STUDY OF CLASSICAL DIFFRACTION GRATINGS
USING MATRIX INVERSION
HAYES L.M. Univ. of Sydney
- 4.00 OPT - PW12
OPTICAL BEAM DEFLECTION USING DYNAMIC VOLUME
REFLECTION GRATINGS
JA Y.H. Telecom Res. Labs.
- 4.00 OPT - PW13
CONICAL DIFFRACTIONS IN A TOURMALINE CRYSTAL
JA Y.H. Telecom Res. Labs.
- 4.00 OPT - PW14
UNPOLARIZED NONLINEAR SURFACE WAVES
VUKOVIC S. ANU
- 4.00 OPT - PW15
NONLINEAR OPTICAL EFFECTS IN ROOM TEMPERATURE
INSB
MCDUFF R. Univ. of Qld
- 4.00 OPT - PW16
THE OPTICAL STRUCTURE AND ABERRATIONS OF THE
HUMAN CRYSTALLINE LENS
SMITH G. Univ. of Melbourne
- 4.00 OPT - PW17
OPTICAL PROPERTIES AND STRUCTURE OF SILVER-
MAGNESIUM FLUORIDE CERMET FILMS
GAJDARZISKA- Univ. of Sydney
- 4.00 OPT - PW18
TRANSPORT EQUATION FOR ION BEAM SYNTHESIS OF
THIN FILM SURFACE LAYERS
MULLER K.H. CSIRO Applied Physics
- 4.00 OPT - PW19
THE USE OF HIGH QUALITY METAL MIRRORS FOR INFRARED
IMAGING AND INSTRUMENTATION
WATERWORTH M.D. Univ. of Tasmania

Solar/Space/Terrestrial

- 4.00 SST - PW1
DIGITAL PROCESSING OF SOLAR IMAGES: FILAMENTS
AND PROMINENCES
WILLOCK E.C. IPS
- 4.00 SST - PW2
IPS ROUTINE SERVICES SECTION- RADIOPROPAGATOR INFO
FOR HIGH FREQ. RADIOCOMMUNICATORS
ROBINSON G.E. IPS
- 4.00 SST - PW3
IPS ACTIVITIES DURING THE IGY
WILKINSON P.J. IPS
- 4.00 SST - PW4
DISCRETE REFLECTORS IN THE D-LAYER
JONES K.L. Univ. of Queensland
- 4.00 SST - PW5
AUSAT ANOMALIES COMPARED WITH ANOMALIES
OBSERVED IN OTHER SATELLITES
EAGLETON P. IPS
- 4.00 SST - PW6
THE MAWSON OBSERVATORY
CONDE M. Mawson Inst.
- 4.00 SST - PW7
THE DAVIS OBSERVATORY
MCCLOUGHLIN R. Mawson Inst.

 7.00 CONFERENCE DINNER Galaxy Room, AJC Randwick

THURSDAY MORNING

8.30 PLENARY LECTURE

Science Theatre

9.15 PLENARY LECTURE

Science Theatre

10.00 Morning Tea

10.30 SPECIALIST LECTURES

ACOUSTICS

Room 27

Physics Bldg

"Seismoacoustics and
Sea Floor Interaction"

Chair

10.30 ACO - TM1 (INVITED)

GEOACOUSTICS AND THE INTERACTION OF
WATERBORNE SOUND WITH THE SEAFLOOR
KIBBLEWHITE A.C. Univ. of Auckland

(invited talk continues)

11.15 ACO - TM2

MODELLING OF P-S CONVERTED WAVES IN MARINE
SEISMIC DATA

KRAVIS S.P. Bureau of Mineral Resources

11.30 ACO - TM3

ULTRASONIC INTERFEROMETRIC MEASUREMENT OF
PRESSURE DEVIATIONS ON ELASTIC WAVE VELOCITIES
NIESLER H. ANU

(invited talk continues)

11.45 ACO - TM4

A COMPARISON OF SEISMOMETER AND HYDROPHONE
RECORDINGS OF VLF PROPAGATION ON CONTINENTAL
BIBEE L.D. NSTL12.00 AMQ - TM3
AN ELECTRON PROTON COINCIDENCE EXPERIMENT
ON E-HG COLLISIONS USING STEPWISE LASER EXCN.
MURRAY A.J. Griffith Univ.

12.15 AMQ - TM4

T-MATRIX AVERAGING METHODS
SLIM H. Murdoch Univ.

1.30

LUNCHTIME LECTURE

Private Sector Research Agencies
Keith Burrows Theatre

THURSDAY MORNING

8.30 Dr. M. M. Nieto, Los Alamos Laboratory

9.15 Prof. M. Green, University of New South Wales

10.00 Morning Tea

10.30 SPECIALIST LECTURES

BIOPHYSICS

Keith Burrows Theatre

Physics Bldg

"Membrane Biophysics"

Chair Dr. William Sawyer

10.30 BIO - TM1

FLUORESCENCE QUENCHING STUDIES OF FLUORESCENIN
ATTACHED TO LYS-61 OR CYS-374 IN ACTIN:
MIKI M. Univ. of Sydney

10.30 CMP - TM1 (INVITED)

MOLECULAR BEAM EPITAXY FOR LOW DIMENSIONAL
STRUCTURES
WOOD C. GEC Research

(invited talk continues)

11.00 BIO - TM2

CONFORMATION OF GRAMICIDIN IN MODEL MEMBRANES
SMITH R. Univ. of Qld

11.00 CMP - TM2

QUANTUM TRANSPORT AND MAGNETOLUMINESCENCE
IN WIDE QUANTUM WELLS IN INP/(IN GA)AS
SIMMONDS P.E. Univ. of Wollongong

11.15 CMP - TM3

DYNAMIC RESPONSE OF THE 2-D ELECTRO GAS IN THE
GAALAS HETEROSTRUCTURES
SZYMANSKI J. Telecom

11.30 BIO - TM3

FURTHER SPECTROSCOPIC STUDY ON CU(II)BLEOMYCIN
AT ITS BIOCHEMICALLY PREFERABLE STATE OF DNA
HONG Y.C. Monash Univ.

11.30 CMP - TM4

OPTICAL PROPERTIES OF SEMICONDUCTOR DOPING-
SUPERLATTICES
GAL M. Univ. of NSW

11.45 CMP - TM5

XRAY DIFFRACTION MEASUREMENTS OF A STRAIN INDUCED
PHASE TRANSITION IN IN(X)GA(1-X)AS/GAAS
ORDERS P.J. Telecom

12.00 BIO - TM4

EXCITATION IN DRUG INTERACTIONS
GUTMANN F. Macquarie Univ.

12.00 CMP - TM6

ELECTRON MICROSCOPE STUDIES OF THE IN(X)GA(1-X)AS
/GAAS INTERFACE IN MBE DEPOSITED MATERIAL
COCKAYNE D.J. Univ. of Sydney

12.15 CMP - TM7

RESONANT RAMAN SCATTERING IN SHORT PERIOD
GAAS/ALAS SUPERLATTICES
STAINES M.P. MPI fur Festkörperforschung

1.30

Dr. P. Hewitt, Hunter Technology Development Centre
---a Threat to Traditional Research Institutes?---

THURSDAY MORNING

- 8.30 PLENARY LECTURE Science Theatre
- 9.15 PLENARY LECTURE Science Theatre
- 10.00 Morning Tea
- 10.30 SPECIALIST LECTURES

GASEOUS ELECTRONICS

Dwyer Theatre
Chemistry Bldg
"prebreakdown and Corona"
Chair Dr. R. Crompton

10.30 GEM - TM1
MONTE CARLO SIMULATION OF THE ELECTRON SWARM
IN N₂ UNDER AN RF FIELD CONDITION
SATO N. Hokkaido Univ.

10.45 GEM - TM2
A NEW EXPERIMENTAL DEVICE FOR THE STUDY OF NON-
EQUILIBRIUM DENSITIES IN A SODIUM PLASMA
WELLS W.E. Miami Univ. Ohio

11.00 GEM - TM3
TEMPORAL INCREASE OF GAS TEMPERATURE IN DISCHARGE
GAP OF THE POSITIVE POINT REPETITIVE STREAMER...
KONDO K.

11.15 GEM - TM4
THEORY OF POSITIVE CORONA IN AN ELECTRONEGATIVE
GAS
MORROW R. CSIRO Applied Physics

11.30 GEM - TM5
DC CORONA ANALYSIS USING LASER INTERFEROMETER
AND SCHLIEREN TECHNIQUES
LAMB D.W. UNE

11.45 GEM - TM6
THE INFLUENCE OF PPM LEVELS OF OXYGEN IMPURITY
ON THE SPATIAL AND TEMPORAL GROWTH OF IONIZATION...
ERNEST A.D. UNE

12.00 GEM - TM7
RUNAWAY ELECTRONS IN LOW PRESSURE NEON DISCHARGES
FLETCHER J. Flinders Univ.

12.15 GEM - TM8
THE INFLUENCE OF VIBRATIONALLY EXCITED ELECTRONIC
GROUND STATE MOLECULES ON THE GROWTH OF IONIZ'N ..
ERNEST A.D. UNE

1.30 LUNCHTIME LECTURE
Private Sector Research Agencies

GRAVITATION

Mellor Theatre
Chemistry Bldg
"Gravitation and
Related Problems"
Chair

10.30 GRA - TM1
* GEOPHYSICAL INDICATIONS AND IMPLICATIONS OF
A FIFTH FORCE
STACEY F.D. Univ. of Queensland

11.00 GRA - TM2
SOME NOVEL FIFTH FORCE EXPERIMENTS
TUCK G.J. Univ. of Queensland

11.30 GRA - TM3 (INVITED)
REPORT ON THE GREENLAND BIG G EXPERIMENT
NIETO M.M. Los Alamos National Labs.

(invited talk continues)

12.00 GRA - TM4
GRAVITY GRADIOMETRY AND GRADIOMETERS
MOORE G.I. Univ. of Queensland

1.30 LUNCHTIME LECTURE
Keith Burrows Theatre
Private Sector Research Agencies

THURSDAY MORNING

- 8.30 Dr. M. M. Nieto, Los Alamos Laboratory
- 9.15 Prof. M. Green, University of New South Wales
- 10.00 Morning Tea
- 10.30 SPECIALIST LECTURES

MSM WAVES/OPTICS

Murphy Theatre
Chemistry Bldg
"MSM Optics"
Chair Prof. A. Klein

10.30 MSM - TM1 (INVITED)
PHASE CONJUGATION AT SUBMILLIMETER
WAVELENGTHS
KRUG P.A. Univ. of Sydney

(invited talk continues)

11.00 MSM - TM2 (INVITED)
THEORY AND EXPERIMENT FOR CAPACITIVE GRIDS
ON METAL SUBSTRATES
DAWES D.H. Univ. of Sydney

(invited talk continues)

11.30 MSM - TM3
FIELDS DIFFRACTED BY CIRCULAR APERTURES IN THICK
SCREENS
ROBERTS A. Univ. of Sydney

11.45 MSM - TM4
STRIP GRATING OUTPUT COUPLERS FOR MM-WAVE LASERS
STIMSON P.A. CSIRO Applied Physics

12.00 MSM - TM5
MULTIPLE BEAM IMAGING SYSTEMS AT MM WAVELENGTHS
FOURIKIS N. ERL, DSTO

12.15 MSM - TM6
RADIATION PROPAGATION IN OVERMODDED CIRCULAR
AND RECTANGULAR WAVEGUIDES.....
FROST B.S. Univ. of QLD

1.30 Dr. P. Hewitt, Hunter Technology Development Centre
---a Threat to Traditional Research Institutes?

NUCLEAR/PARTICLE PHYSICS

Hall A
Webster Bldg
"Light Nuclei and
Intermediate Energy II"
Chair Prof. B. Spicer

10.30 NUP - TM1 (INVITED)
THE MARVELS OF CHARGE SYMMETRY IN LOW ENERGY
NUCLEAR PHYSICS
THOMAS A.W. Univ. of Adelaide

(invited talk continues)

11.00 NUP - TM2
SPECTROSCOPIC STUDIES OF ¹⁷⁰USING
BREMSSTRAHLUNG
EDEN J. Univ. of Melbourne

11.15 NUP - TM3
CROSS SECTIONS OF REACTIONS WITH ⁵⁵Mn AS
COMPOUND NUCLEUS
HANSFER V.Y. Univ. of Melbourne

11.30 NUP - TM4
THE ⁷²Zr(γ, p_0) ⁷²Zr CROSS SECTION
KARATAGLIDIS S. Univ. of Melbourne

11.45 NUP - TM5
* A REVIEW OF MEDIUM PHOTONUCLEAR STUDIES BY THE
MELBOURNE GROUP
THOMPSON M.N. Univ. of Melbourne

12.00 NUP - TM6
CROSS SECTIONS OF PROTON INDUCED REACTIONS ON
THE NICKEL ISOTOPES
TINGWELL C.I. Univ. of Melbourne

THURSDAY MORNING

 8.30 PLENARY LECTURE Science Theatre

 9.15 PLENARY LECTURE Science Theatre

 10.00 Morning Tea

 10.30 SPECIALIST LECTURES

SOLAR SPACE TERRESTRIAL B

Room G25
 Electrical Engineering Bldg
 "High Latitude Ionosphere
 and Upper Atmosphere Physics"
 Chair Dr. G. Burns

10.30 SST - TM1 (INVITED)
 THE AURORA AND ITS RELATIONSHIP TO NEAR
 EARTH PLASMAS
 FRANK L.A. Univ. of Iowa

(invited talk continues)

11.00 SST - TM2
 NEUTRAL THERMOSPHERIC WINDS OVER MAWSON
 CONDE M. Mawson Inst.

11.15 SST - TM3
 SCANNING SPECTROPHOTOMETER OBSERVATIONS OF
 HYDROXYL EMISSION S AT DAVIS ANTARCTICA
 WILLIAMS P.F. Antarctic Divn.

11.30 SST - TM4
 PROPAGATION PHENOMENA ON 244 MHZ AND 1500 MHZ
 AT HIGHER LATITUDES
 RASCH D. Antarctic Division, AMARE

11.45 SST - TM5
 STRUCTURE OF REFLECTIONS OBSERVED BY THE 2 MHZ
 SPACED ANTENNA PARTIAL REFLECTION RADAR ...
 PHILLIPS A. Mawson Institute

12.00 SST - TM6
 AN INVESTIGATION OF THE TEC USING A CHAIN OF
 FARADAY ROTATION AND DIFF. DOPPLER STATIONS
 MALLIS M. LaTrobe Univ.

12.15 SST - TM7
 THE STUDY OF TRAVELLING IONOSPHERIC DISTURBANCES
 OVER MACQUARIE ISLAND USING OBLIQUE...RADIO...
 BEGGS H. Antarctic Divn.

 1.30 LUNCHEON LECTURE Keith Burrows Theatre
 Private Sector Research Agencies

NOTES

THURSDAY AFTERNOON

SPECIALIST LECTURES

2.00 ATOMIC/MOLECULAR PHYSICS
Hall B
Webster Bldg
"Molecular Dynamics"
Chair Dr. R. D. Harcourt

BIOPHYSICS
Keith Burrows Theatre
Physics Bldg
"Membrane Dynamics
and Structure"
Chair Dr. J. Smith

2.00 AMQ - TAI (INVITED)
SHINING LIGHT ON CLUSTERS: SPECTROSCOPY,
IONIZATION AND DYNAMICS OF DISSOCIATION
CASTLEMAN A.W. Penn. State U.

2.00 BIO - TAI
VERTICAL FLUCTUATIONS OF ACYL CHAINS IN
PHOSPHOLIPID BILAYERS
WARDLAW J.R. Univ. Melbourne

(invited talk continues)

2.15 BIO - TA2
ROTATIONAL DYNAMICS OF HUMAN PLASMA
LIPOPROTEINS
TILLEY L. Melbourne Univ.

2.30 ACO - TA2
MEASUREMENT OF SEDIMENT PROPERTIES CRITICAL
TO ACOUSTIC PROPAGATION CHARACTERISTICS
DUNLOP J.I. Univ. of NSW

2.30 BIO - TA3
FORCES BETWEEN BILAYERS CONTAINING
GLYCOSPHINGOLIPIDS
PARKER J. A.N.U.

2.45 AST - TA2
SPECTROSCOPIC OBSERVATIONS OF SN1987A
CANNON R.D. AAO

2.45 AMQ - TA2 (INVITED)
DISSOCIATION DYNAMICS OF SUPEREXCITED MOLECULES
HATANO Y. Tokyo Inst. of Technology

2.45 BIO - TA4
THE INTERACTION OF N-ALKANES WITH LIPID BILAYER
MODEL BIOLOGICAL MEMBRANES
LITTLEMORE L.A. UNSW

3.00 AST - TA3
SN1987A AS A PROBE OF THE INTERSTELLAR AND
INTERGALACTIC MEDIUM
PETTINI M. Anglo Australian Obs.

3.00 BIO - TA5
INTERACTION OF MYELIN BASIC PROTEIN WITH MIXED
DETERGENT MICELLES
MENDZ G.L. Univ. of Sydney

3.30 ACO - TA4
DETERMINATION OF GEOACOUSTIC PROPERTIES BY
2-FREQUENCY SYNTHETIC-APERTURE METHOD
LAWRENCE M.W. DSTO

3.15 AST - TA4
A NEW ESTIMATE OF THE RATE OF GRAVITATIONAL
COLLAPSE IN THE GALAXY
BLAIR D. Univ. of W.A.

3.30 AMQ - TA3
DIRECT OBSERVATION OF THE DYNAMICS OF SUB-
MICROSECOND VIBRATIONAL EXCITATION ELECTRON INTERACTIONS IN GASES
COOPER R. Univ. of Melbourne

3.15 BIO - TA6
ACTIVATION OF PROTEIN KINASE BY MEMBRANE
FLUIDIZERS
LESTER D.S. Weizman Institute

4.00 ACO - TA5
DEEP OCEAN SEDIMENT STRUCTURE AND ACOUSTIC BOTTOM
LOSS ESTIMATES FROM A DEEPLY TOWED SEISMIC SYSTEM
GETTRUST J.F. NSTL

3.30 AST - TA5
THE SIGNIFICANCE OF IRON IN THE LIVES OF TYPES
I AND II SUPERNOVAE
NORMAN P.D. Chisholm I.T.

3.45 AST - TA6
IONOSPHERIC EFFECTS OF SUPERNOVA EXPLOSIONS
EDWARDS P.J. Canberra CAE

4.00 AMQ - TA5
IR-UV DOUBLE RESONANCE STUDIES OF ROVIBRATIONAL
ENERGY TRANSFER .. ROTATIONALLY SELECTIVE V-V PROCS.
BEWICK C.P. UNSW

4.30 ACO - TA6
A RAY MODEL FOR OCEAN BOTTOM REFLECTION LOSS
IN THIN SEDIMENTS
CHAPMAN N.R. D.S.E.

5.00 ACO - TA7
SELECTED RESULTS OF SEISMO-ACOUSTIC PROPAGATION
MEASUREMENTS IN SEVERAL OCEAN ENVIRONMENTS
ALI H.B. NSTL

POSTER PRESENTATIONS AND REFRESHMENTS

7.30 Prof. H. C. Bolton, Monash University
"The Development of Physics in Australia"

THURSDAY AFTERNOON

SPECIALIST LECTURES

2.00 ATOMIC/MOLECULAR PHYSICS
Hall B
Webster Bldg
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"The Development of Physics in Australia"

THURSDAY AFTERNOON

2.00 SPECIALIST LECTURES

CONDENSED MATTER PHYSICS

Theatre LG1
Electrical Engineering Bldg
"Semiconductor Devices"
Chair Dr. C. P. Foley

2.00 CMP - TA1 (INVITED)
NOVEL HETEROSTRUCTURES FOR MILLIMETER-WAVE DEVICES
GRIFFITHS G.J. CSIRO Radiophysics

(invited talk continues)

2.30 CMP - TA2
HOT ELECTRON TRANSPORT IN THIN GAAS LAYERS
NELLSON D. Telecom

2.45 CMP - TA3
EQUIVALENT CIRCUIT OF QUANTUM HALL DEVICES
RICKETTS B.W. CSIRO Applied Physics

3.00 CMP - TA4
THE PREPARATION AND OPTICAL PROPERTIES OF SPUTTERED NITRIDE SEMICONDUCTORS
TANSLEY T.L. Macquarie Univ.

3.15 CMP - TA5
MOLECULAR ELECTRONICS - CONDUCTING POLYMER MATERIALS
UNSWORTH J. Macquarie Univ.

3.30 CMP - TA6
ENHANCED TETRAHEDRAL BONDING IN SILICON, CARBON AND CARBON-SILICON BASED AMORPHOUS MATERIALS
SMITH G.B. NSWIT

3.45 CMP - TA7
THIN FILM DC SQUIDS WITH ION BEAM OXIDISED JUNCTIONS
SLOGGETT G.J. CSIRO Applied Physics

4.00

POSTER PRESENTATIONS AND REFRESHMENTS

7.30

EVENING LECTURE

Keith Burrows Theatre

THURSDAY AFTERNOON

2.00 SPECIALIST LECTURES

GRAVITATION

Mellor Theatre
Chemistry Bldg
"Gravitation and Related Problems"
Chair

2.00 GRA - TA1 (INVITED)
THEORY AND STATUS OF THE EXPERIMENT TO MEASURE THE GRAVITATIONAL ACCELERATION OF ANTIPROTONS
NIETO M.M. Los Alamos Nat. Labs.

(invited talk continues)

2.30 GRA - TA2
A NON-UNIFORM FIELD MODEL OF THE 4-GAUZE TIME-OF-FLIGHT EXPERIMENT
STANDISH R.K. ANU

2.45 GRA - TA3
GRAVITY INDUCED CONTACT POTENTIALS IN CONDUCTORS
ROSSI F. Univ. of Melbourne

3.00 GRA - TA4
EFFECTS OF SURFACE ELECTRIC FIELDS IN GRAVITY EXPERIMENTS WITH ANTIMATTER
DARLING T. Univ. of Melbourne

3.15 GRA - TA5
INVESTIGATIONS INTO INERTIAL ELECTRIC SIGNALS IN VARIOUS METALS
MOORHEAD G. Univ. of Melbourne

3.30 MSM - TA5
DUAL-BEAM INTERFEROMETERS FOR THE FIR/MM-WAVE REGION
BLANCO M.M. CSIRO Applied Physics

MSM WAVES

Nyholm Theatre
Chemistry Bldg
"MSM Systems"
Chair Dr. J. R. Birch

2.00 MSM - TA1 (INVITED)
MM-WAVE SYSTEMS APPLICATIONS
WILTSE J.C. Georgia I.T.

(invited talk continues)

2.30 MSM - TA2 (INVITED)
SYSTEMS OPERATING AT MM WAVELENGTHS
FOURIKIS N. ERL, DSTO

(invited talk continues)

3.00 MSM - TA3
APPLICATION OF SIMULTANEOUS CASCADE OPERATION OF O.P.FIR LASERS TO INTERFEROMETRY
JAMES B.W. Univ. of Sydney

3.15 MSM - TA4
RELATIONSHIPS BETWEEN TRANSMISSION LINE MODELS FOR PERIODIC METAL GRIDS AND DIELECTRIC FILMS
WHITBOURN L.B. CSIRO Min. Phys.

4.00

POSTER PRESENTATIONS AND REFRESHMENTS

7.30

Prof. H. C. Bolton, Monash University
"The Development of Physics in Australia"

THURSDAY AFTERNOON

2.00 SPECIALIST LECTURES

NUCLEAR/PARTICLE PHYSICS

Hall A
Webster Bldg
"Particle Physics I"
Chair Prof. A. Poletti

2.00 NUP - TA1 (INVITED)
LEPTON SCATTERING AND THE STRUCTURE OF THE NUCLEON
TAYLOR G.N. Univ. of Melbourne

(invited talk continues)

2.30 NUP - TA2
PROBING THE QUARK STRUCTURE OF NUCLEONS AND NUCLEI
BICKERSTAFF R.P. Univ. of Adelaide

2.45 NUP - TA3
SOLITON MATTER IN THE TWO DIMENSIONAL LINEAR SIGMA MODEL
DODD L.R. Univ. of Adelaide

3.00 NUP - TA4 (INVITED)
SURVEY OF THEORETICAL PARTICLE PHYSICS
CREWSTER R.J. Univ. of Adelaide

(invited talk continues)

3.30 NUP - TA5
FERMIONIC COORDINATES AND GRASSMAN FUNCTIONS
DELBOURGO R. Univ. of Tasmania

3.45 NUP - TA6
EXPERIMENTAL SEARCHES FOR DOUBLE BETA DECAY
MITCHELL L.W. Caltech

4.00

POSTER PRESENTATIONS AND REFRESHMENTS

7.30

EVENING LECTURE

Keith Burrows Theatre

THURSDAY AFTERNOON

2.00 SPECIALIST LECTURES

PLASMA PHYSICS

Room 31
Physics Bldg
"High Density Plasma
and Laser Fusion"
Chair

2.00 PLA - TA1 (INVITED)
LASER FUSION IGNITION AT MODERATE COMPRESSION
AND DOUBLE LAYER EFFECTS IN LASER PLASMAS
HORA H. UNSW

(invited talk continues)

2.30 PLA - TA2 (INVITED)
A-REVIEW OF RECENT RESEARCH ON LASER PRODUCED PLASMAS FROM THE ANU
LUTHER-DAVIES B ANU

(invited talk continues)

3.00 PLA - TA3
INTENSE WIDE SPREAD SECOND HARMONIC LONGITUDINAL WAVES DRIVEN BY LASER RADIATION IN PLASMAS
GOLDSWORTHY M.Y. Univ. of NSW

3.15 PLA - TA4
INTERACTION OF FS LASER PULSES WITH HIGH-Z PLASMAS
MULSER P. Univ. of Darmstadt

3.30 PLA - TA5
DYNAMICS OF AN ELONGATED Z PINCH
ALI J.B. Univ. Tech., Malaysia

3.45 PLA - TA6
PLASMA PHYSICS IN S.E. ENGLAND
TALLENTS G.J. Rutherford Labs.

4.00 PLA - TA7
NEW ASPECTS OF ADVANCED NUCLEAR FUEL FUSION
MILEY G.H. Univ. of Illinois-Urbana

4.00

POSTER PRESENTATIONS AND REFRESHMENTS

7.30

Prof. H. C. Bolton, Monash University
"The Development of Physics in Australia"

SOLAR ENERGY

Room EG25
Electrical Engineering Bldg
Chair

2.00 SOL - TA1 (INVITED)
HIGH EFFICIENCY PHOTOVOLTAIC CELLS
BOER K. Univ. of Delaware

(invited talk continues)

2.45 SOL - TA2

NUCLEATION/SUBCOOLING DYNAMICS OF PHASE CHANGE MATERIALS FOR SOLAR ENERGY STORAGE
BRANDSTETTER A. ANU

3.00 SOL - TA3

PROSPECTS FOR HIGH TEMPERATURE NON-TRACKING SOLAR COLLECTORS
MILLS D.R. Univ. of Sydney

3.15 SOL - TA4

GAS ADSORPTION STUDIES ON AMORPHOUS CARBON SURFACES - APPLICATION TO EVACUATED TUBULAR SOLAR
O'SHEA S. Syd. Uni.

THURSDAY AFTERNOON

4.30 SPECIALIST LECTURES

2.00 SOLAR SPACE TERRESTRIAL A
Room G24
Electrical Engineering Bldg
"Geomagnetic Pulsations I"
Chair Dr. F. W. Menk

2.00 SST - TA1 (INVITED)
COMPRESSIONAL TRANSVERSE AND COUPLED MHD WAVES
IN THE MAGNETOSPHERE AND THE IONOSPHERE
KIVELSON M.G. UCLA

(invited talk continues)

2.30 SST - TA2
THE EFFECT OF EXB DRIFTS AND OXYGEN IONS ON LOW
LATITUDE ULF PULSATION EIGENPERIODS
POULTER P.W. DSIR

2.45 SST - TA3
PC3 PULSATIONS OBSERVED IN THE MAGNETOSPHERE
BY THE ISEE -1 AND -2 SPACECRAFT
FRASER B.J. Univ. of Newcastle

3.00 SST - TA4
CROSS SPECTRAL PHASE ANALYSIS OF PC3
GEOMAGNETIC PULSATIONS AT LOW LATITUDES
WATERS C.L. Univ. of Newcastle

3.15 SST - TA5
POLARIZATION CHARACTERISTICS OF LOW LATITUDE
PC3-4 GEOMAGNETIC PULSATIONS
ZIESOLLECK C. Univ. of Newcastle

3.30 SST - TA6
A COMPARISON OF THE POLARIZATIONS AND WAVE
VELOCITIES OF HIGH LATITUDE P12'S ...
WEBSTER D.J. Univ. of Alberta

3.45 SST - TA7
MULTISTATION OBSERVATIONS OF PC1-2 EMISSIONS
IN THE POLAR CUSP AND CAP REGIONS
MENK.F.W. Univ. of Newcastle

4.00 POSTER PRESENTATIONS AND REFRESHMENTS

7.30 EVENING LECTURE

Keith Burrows Theatre

THURSDAY AFTERNOON

4.30 SPECIALIST LECTURES

PLASMA, ASTROPHYSICS AND
SOLAR SPACE TERRESTRIAL A
Murphy Theatre
Chemistry Bldg
"Space, plasma & astrophysics"
Chair Dr. A. Phillips

SOLAR SPACE TERRESTRIAL B
Room G25
Electrical Engineering Bldg
"High Latitude Ionosphere
and Upper Atmosphere Physics"
Chair Dr. A. Phillips

4.30 PLA - TA8 (INVITED)
CURRENT-DISSIPATION MODELS FOR SOLAR FLARES
MELROSE D.B. Univ. of Sydney

4.30 SST - TA8
DIURNAL, SEASONAL AND STORM-TIME VARIABILITY OF
THE TEC OF THE IONOSPHERE N OF MACQUARIE IS.
CRAVEN M. LaTrobe Univ.

(invited talk continues)

4.45 SST - TA9
SOME ASPECTS OF ELECTRIC FIELD MAPPING IN
THE AURORAL IONOSPHERE
ZHANG D.Y. La Trobe Univ.

5.00 PLA - TA9
INFINITE CONTRACTION IN PLANAR FORCE-FREE
MAGNETIC FIELD EVOLUTION
WATTERSON P.A. ANSTO

5.00 SST - TA10
GEOMAGNETIC PULSATIONS ASSOCIATED WITH SUBSTORM
ONSET
GRANT A.F. Antarctic Divn.

5.15 PLA - TA10
NONLINEAR SURFACE ALFVEN WAVES IN INHOMOGENEOUS
PLASMAS
CRAMER N.F. Univ. of Sydney

5.15 SST - TA11
DELAYS IN THE MAGNETIC SIGNATURE OF HALL AND
PEDERSEN CURRENT FLUCTUATIONS DURING P1(C) EVENTS
BURNS G.B. Antarctic Divn.

5.30 PLA - TA11
ARE ION-CONICS DUE TO DOUBLE ABSORPTION
OF ALFVEN WAVES?
BALL L.T. Univ. of Sydney

5.30 SST - TA12
INSTRUMENTATION FOR THE STUDY OF THE GEOELECTRIC
FIELD AT DAVIS, ANTARCTICA.
MCLOUGHLIN R.G. Antarctic Divn.

5.45 PLA - TA12
ELECTROMAGNETIC PLASMA SHOCKS
ROMANIN B.S. LaTrobe Univ.

6.00 PLA - TA13
WAVE PHENOMENA PRECEDING AND DURING A BEAM
PLASMA DISCHARGE
BOSWELL R.W. ANU

6.15 PLA - TA14
TURBULENT BURSTS IN THE LONG TERM EVOLUTION OF THE
BEAM PLASMA DISCHARGE
MOREY I.J. ANU

7.30 Prof. H. C. Bolton, Monash University
"The Development of Physics in Australia"

 POSTER PRESENTATIONS AND REFRESHMENTS

Atomic/Molecular

- 4.00 AMQ - PT1
 RITINE NEW STATES OF ATOMIC HYDROGEN
 WILLIAMS J.F. Univ. of W.A.
- 4.00 AMQ - PT2
 STUDIES UTILIZING A SOURCE AND DETECTOR OF POLARIZED ELECTRONS
 YATES A.L. Univ. of W.A.
- 4.00 AMQ - PT3
 (E,2E) EXPERIMENTS ON THIN FILMS OF ALUMINIUM
 BENNETT M.A. Univ. of W.A.
- 4.00 AMQ - PT4
 IMPROVED DATA COLLECTION TECHNIQUES FOR (E,2E) ELECTRON MOMENTUM SPECTROSCOPY
 HAYES P. Univ. of W.A.
- 4.00 AMQ - PT5
 A STUDY OF PERIODIC PRESSURE BURSTS IN OIL DIFFUSION PUMPED HIGH VACUUM SYSTEMS
 FLEXMAN J.H. Univ. of W.A.
- 4.00 AMQ - PT6
 HYPERFINE STRUCTURE AND OPTICAL MUTATIONS IN SODIUM
 FARRELL P.M. Univ. of Griffith
- 4.00 AMQ - PT7
 ELECTRON CORRELATION EFFECTS IN DOUBLY EXCITED STATES
 NEWMAN D.S. ANU
- 4.00 AMQ - PT8
 LASER INDUCED AUTOIONIZING RESONANCE STRUCTURES
 CHAPPLE P. A.N.U.
- 4.00 AMQ - PT9
 ACCELERATION OF ELECTRONS FROM AN INTENSE LASER BEAM
 SYMONS H. ANU
- 4.00 AMQ - PT10
 MOMENTUM SPACE METHODS IN ELECTRON-HYDROGENIC ION SCATTERING
 RATNAVELU K. Flinders Univ.
- 4.00 AMQ - PT11
 ELECTRON SCATTERING FROM MAGNESIUM
 HOUGHTON R.K. Flinders Univ.
- 4.00 AMQ - PT12
 DIFFERENTIAL CROSS-SECTIONS FOR VIBRATIONAL EXCITATION IN N₂
 TEUBNER P.J. Flinders Univ.
- 4.00 AMQ - PT13
 PHOTOELECTRON SPECTROSCOPY OF THE NITROGEN DIMER AND CLUSTERS
 CARNOVALE F. La Trobe Univ.
- 4.00 AMQ - PT14
 A DIM STUDY FOR SINGLY IONIZED ARGON AND XENON CLUSTERS
 VALLDORF J. La Trobe Univ.
- 4.00 AMQ - PT15
 COLLISIONAL DEEXCITATION AND THE BINDING ENERGY OF D₃⁺
 HOGARTH M.A. Univ. of W.A.
- 4.00 AMQ - PT16
 VIBRATIONAL ENERGY TRANSFER BY FERMION RESONANCE IN HYDROGEN BONDED AMIDES
 CLARKE D.L. ANU
- 4.00 AMQ - PT17
 POTENTIAL SURFACES FOR THE REACTION OF COMPLEX CATIONS WITH MOLECULAR HYDROGEN
 ISCHTWAN J. ANU
- 4.00 AMQ - PT18
 THE ANALYTIC CONFIGURATION INTERACTION GRADIENT METHOD: THE CALCULATION OF ONE ELECTRON
 RENDELL A.P. Univ. of Sydney
- 4.00 AMQ - PT19
 THE PREDICTION OF THE 14N NUCLEAR QUADRUPOLE MOMENT FROM AB INITIO QUANTUM CHEMICAL STUDIES
 CUMMINS P.L. Univ. of Sydney
- 4.00 AMQ - PT20
 ON THE STRUCTURE, LATTICE ENERGY AND 14N NUCLEAR QUADRUPOLE COUPLING CONSTANT OF SOLID HCN
 BACKSAY G.B. Univ. of Sydney

7.30 EVENING LECTURE

Keith Burrows Theatre

 POSTER PRESENTATIONS AND REFRESHMENTS

- 4.00 AMQ - PT21
 ELECTRONIC CONSTANTS OF LI₃⁺
 SEARLES D.J. Univ. of Newcastle
- 4.00 AMQ - PT22
 NON-LOCAL DENSITY FUNCTIONAL THEORY.
 KEMISTER G. La Trobe Univ.
- 4.00 AMQ - PT23
 MEASUREMENT OF AUGER ANGULAR CORRELATIONS IN ARGON USING POSITRON SENSITIVE DETECTORS
 BELL S. Flinders Univ.
- 4.00 AMQ - PT24
 POST COLLISION INTERACTION EFFECTS IN AUGER ELECTRONS DETECTED IN COINCIDENCE
 BELL S. Flinders Univ.
- 4.00 AMQ - PT25
 CORRELATION EFFECTS IN ELECTRON IMPACT INDUCED AUTOIONIZATION OF HELIUM
 LOWER J. Flinders Univ.
- 4.00 AMQ - PT26
 VALENCE ELECTRON MOMENTUM DISTRIBUTIONS IN ZINC
 GRISOGONO A. Flinders Univ.
- 4.00 AMQ - PT27
 FOURIER TRANSFORM MASS SPECTROMETRIC STUDIES OF UV LASER ABLATIVE PHOTODECOMPOSITION PRODUCTS
 WILLETT G.D. UNSW
- 4.00 AMQ - PT28
 ULTRAVIOLET LASER DESORPTION FOURIER TRANSFORM MASS SPECTROMETRY
 NGUYEN H. UNSW
- 4.00 AMQ - PT29
 CONFORMATIONAL STUDIES OF MADH BIOLOGICAL REDOX COFACTORS
 CUMMINS P.L. Univ. of Sydney
- 4.00 AMQ - PT30
 THEORETICAL STUDIES OF GUANIDINIUM-TYPE RESONANCE STABILIZATION
 WILLIAMS G. Univ. of Sydney

7.30

 Prof. H. C. Bolton, Monash University
 "The Development of Physics in Australia"

THURSDAY POSTER

4.00 POSTER PRESENTATIONS AND REFRESHMENTS

Condensed Matter Physics

- 4.00 CMP - PT1
ELECTRICAL CONTACTS TO GAAS
HOLLOWAY P.H. Univ. of Florida
- 4.00 CMP - PT2
SURFACE CHARACTERIZATION USING OPTICAL REFLECTANCE
HOLLOWAY P.H. Univ. of Florida
- 4.00 CMP - PT3
PHOTOLUMINESCENCE STUDIES OF HYDROGEN PASSIVATION
OF IMPURITIES IN GAAS
FISHER T.A. Univ. of Wollongong
- 4.00 CMP - PT4
A COMBINED AUGER LINESHAPE ANALYSIS AND SURFACE
PHOTOVOLTAGE STUDY OF IMP
RAIKER G.N. Murdoch Univ.
- 4.00 CMP - PT5
PHOTOLUMINESCENCE SPECTROSCOPY OF STRAINED
INGAAS-GAAS QUANTUM WELLS
GAL M. Univ. of NSW
- 4.00 CMP - PT6
EFFECTS OF ADSORPTION ON THE SURFACE PROPERTIES OF
CDTE AND HGTE
WIJEWARDENA K. UNSW
- 4.00 CMP - PT7
REDUCED SYMMETRY AND THE BAND STRUCTURE OF
SEMICONDUCTOR ALLOYS
LING M.F. Univ. of NSW
- 4.00 CMP - PT8
LIMITS TO THE MBE GROWTH OF INGAAS/GAAS
STRAINED LAYERS
PRICE G.L. Telecom
- 4.00 CMP - PT9
X-RAY DIFFRACTION DETERMINATION OF CRITICAL
THICKNESS IN SEMICONDUCTOR INGAAS/GAAS
USHER P.H. Telecom
- 4.00 CMP - PT10
SYSTEMATIC APPROACH TO HIGH RESOLUTION ELECTRON
MICROSCOPE IMAGE INTERPRETATION
SPARGO A.E. Univ. of Melbourne
- 4.00 CMP - PT11
ELECTRON DIFFRACTION ANALYSIS OF AMORPHOUS AND
POLYCRYSTALLINE THIN FILMS
MCKENZIE D.R. Univ. of Sydney
- 4.00 CMP - PT12
PIEZO-ZEEMAN SPECTROSCOPY OF THE BORON IMPURITY
IN SILICON
LEHIS R.A. Univ. of Wollongong
- 4.00 CMP - PT13
PIEZO AND ZEEMAN SPECTROSCOPY OF GROUP III
ACCEPTORS IN GERMANIUM
TAKACS G.J. Univ. of Wollongong
- 4.00 CMP - PT14
TRANSIENT SPECTROSCOPY USING THE HALL EFFECT
KACHWALLA Z. Univ. of NSW
- 4.00 CMP - PT15
THE NATURE OF THE AL SINTERED LAYER ON A SINGLE
CRYSTAL SI SEMICONDUCTOR
WANG R. Massey Univ.
- 4.00 CMP - PT16
SURFACE FIELD AND DOPING EFFECTS ON THE
PHOTORESPONSE OF AMORPHOUS SEMICONDUCTORS
SMITH G.B. NSWIT
- 4.00 CMP - PT17
SOFT X RAY OBSERVATION OF GAP STATES IN C-SI
AND A-SI-H
CRISP R.S. Univ. of W.A.
- 4.00 CMP - PT18
PERSISTENT PHOTOCONDUCTIVITY IN DOPING MODULATED
AMORPHOUS SILICON SUPERLATTICES
ZHANG D.H. UNSW

7.30 EVENING LECTURE

Keith Burrows Theatre

THURSDAY POSTER

4.00 POSTER PRESENTATIONS AND REFRESHMENTS

- 4.00 CMP - PT19
HIGH VOLTAGE AMORPHOUS SILICON SOLAR CELLS
CHARCORN V. UNSW
- 4.00 CMP - PT20
ELECTRODEPOSITION OF CUINSE2 FILMS
SAHU S.N. UNSW
- 4.00 CMP - PT21
FLASH EVAPORATION OF CUINSE2 THIN FILMS
KRISTENSEN R.D. UNSW
- 4.00 CMP - PT22
SUPER DISLOCATION-SUBLATTICE ELECTRONICS IN
SEMICONDUCTORS
KAILA M.M. P.N.G. Univ. of Technology
- 4.00 CMP - PT23
SUPERCONDUCTORS AS PASSIVE THERMOELEMENTS
GOLDSMID H.J. Univ. NSW
- 4.00 CMP - PT24
A STRUCTURAL STUDY OF ELECTROCHROMIC MATERIALS
GREEN D. Univ. of Sydney
- 4.00 CMP - PT25
MULTIPURPOSE PLASMA GENERATOR
VARGA I.K. DSTO
- 4.00 CMP - PT26
OPTIMIZATION OF SYNTHESIS CONDITIONS OF
POLYPYRROLE FROM AQUEOUS SOLUTIONS
MADDISON D.S. Macquarie Univ.
- 4.00 CMP - PT27
ELECTRONIC TRANSPORT IN CONDUCTING POLYMERS
AND GLASSY METALS
KAISER A.B. M.P.I., Stuttgart
- 4.00 CMP - PT28
TEMPERATURE DEPENDENCE OF THERMOELECTRIC POWER
AND ELECTRICAL CONDUCTIVITY IN POLYPYRROLE
MADDISON D.S. Macquarie Univ.
- 4.00 CMP - PT29
POLARIZATION REVERSAL IN FERROELECTRIC POLYMERS
GUY I.L. Macquarie University
- 4.00 CMP - PT30
PRESSURE DEPENDENCE OF ELECTRICAL CONDUCTIVITY
IN POLYPYRROLE
MADDISON D.S. Macquarie Univ.
- 4.00 CMP - PT31
DIFFERENTIAL ELLIPSOMETRY FOR MONITORING THE
GROWTH OF THIN FILMS
HARTLEY R. E.R.L., D.S.T.O.

Nuclear/Particle

- 4.00 NUP - PT1
BOUND COMPTON SCATTERING OF GAMMA RAYS
DOM J.C. J.C.U.N.Q.
- 4.00 NUP - PT2
ABSOLUTE ENERGY OF ^{230}Th SUBTHRESHOLD FISSION
RESONANCE NEAR 715 KEV
WALSH R.L. A.N.S.T.O.
- 4.00 NUP - PT3
DEAD-TIME CORRECTIONS IN THE ASSAY OF PLUTONIUM
USING NEUTRON COINCIDENCE COUNTING
HINES M.G. A.N.S.T.O.
- 4.00 NUP - PT4
CHLORINE-36 STUDIES OF GROUNDWATER IN AUSTRALIA
FIFIELD L.K. A.N.U.
- 4.00 NUP - PT5
LATTICE QED IN 3 AND 4 DIMENSIONS
BURDEN C.J. A.N.U.
- 4.00 NUP - PT6
MASS OF THE ELECTRON NEUTRINO PART II
TAYLOR G.N. Univ. of Melbourne
- 4.00 NUP - PT7
OPTIMIZATION OF SYNTHESIS CONDITIONS OF
POLYPYRROLE FROM AQUEOUS SOLUTIONS
MADDISON D.S. Macquarie Univ.
- 4.00 NUP - PT8
ELECTRONIC TRANSPORT IN CONDUCTING POLYMERS
AND GLASSY METALS
KAISER A.B. M.P.I., Stuttgart
- 4.00 NUP - PT9
TEMPERATURE DEPENDENCE OF THERMOELECTRIC POWER
AND ELECTRICAL CONDUCTIVITY IN POLYPYRROLE
MADDISON D.S. Macquarie Univ.

7.30

Prof. H. C. Bolton, Monash University
"The Development of Physics in Australia"

THURSDAY POSTER

4.00 POSTER PRESENTATIONS AND REFRESHMENTS

4.00 NUP - PT7
PHOTONEUTRONS FROM ^{15}N
BATES I. Univ. of Melbourne

4.00 NUP - PT8
* THE PHOTOPROTON CROSS SECTION OF ^{14}C
MCLEAN D. Univ. of Melbourne

4.00 NUP - PT9
* THE PHOTONEUTRON CROSS SECTION OF ^{16}O IN THE
MEDIUM ENERGY RANGE
O'KEEFE G. Univ. of Melbourne

4.00 NUP - PT10
THE $^{13}\text{C}(e,p)$ REACTION IN THE GIANT DIPOLE
RESONANCE REGION
ZUBANOV D. Univ. of Melbourne

4.00 NUP - PT11
QUARK AND ANTIQUARK DISTRIBUTIONS IN NUCLEI
SCHREIBER A. Univ. of Adelaide

4.00 NUP - PT12
GROUPS, STRINGS AND MICROCOMPUTERS
WYBOURNE B.G. Univ. of Canterbury

4.00 NUP - PT13
PRINCIPLE DECAYS AND THE CONCEPT OF
ODDNESS/EVENNESS
HARRINGS C.O. Hawker College

4.00 NUP - PT14
PRECISION MEASUREMENTS FOR SUPERALLOWED BETA
DECAY
BARKER P.H. Univ. of Auckland

4.00 NUP - PT15
A REVIEW OF COSMIC STRINGS
ALLEN T.J. ANU

4.00 NUP - PT16
AN ELECTROWEAK THEORY WITHOUT HIGGS BOSONS
NICHOLSON A.F.

7.30 EVENING LECTUREKeith Burrows Theatre

NOTES

FRIDAY MORNING

8.30 PLENARY LECTURE

Science Theatre

9.15 PLENARY LECTURE

Science Theatre

10.00 Morning Tea

10.30 SPECIALIST LECTURES

ATOMIC/MOLECULAR PHYSICS

Hall B

Webster Bldg

"Molecular Interactions"

Chair Dr. G. B. Backsay

10.30 AMQ - FM1 (INVITED)

WEAK MOLECULAR INTERACTIONS

BURTON P.G. Univ. of Hologong

(invited talk continues)

11.15 AMQ - FM2 (INVITED)

INTERMOLECULAR INTERACTIONS AND PROPERTIES OF LIQUIDS

AHLRICH R. Univ. Karlsruhe

(invited talk continues)

12.00 AMQ - FM3

THE LONG N-N BOND OF N₂O: SOME MOLECULAR ORBITAL AND VALENCE BOND CALCULATIONS

HARCOURT R.D. Univ. of Melbourne

12.15 AMQ - FM4

X RAY EMISSION SPECTRA FOR POLYATOMIC

MOLECULES: AB INITIO STUDIES

LARKINS F.P. Univ. Tasmania

1.30

LUNCHTIME LECTURE

Keith Burrows Theatre

BIOPHYSICS

Keith Burrows Theatre

Physics Bldg

"Photosynthesis"

Chair Dr. Crista Critchley

and Dr. Mary Beilby

10.30 BIO - FM1

THE MOLECULAR ORGANIZATION OF THE CHLOROPHYLL

A/B-PROTEINS

ANDERSON J.M. CSIRO Plant Industry

10.45 BIO - FM2

KINETICS OF SOME ELECTRON TRANSFER PROCESSES

IN PHOTOSYNTHESIS

HOPE A.B. Flinders Univ.

11.00 BIO - FM3

THE TEMPERATURE DEPENDENCE OF SOME ELECTRON AND

PROTON TRANSFER PROCESSES IN PHOTOSYNTHESIS

LIGGINS J. Flinders Univ.

11.15 BIO - FM4

ESR STUDIES ON THE OXYGEN EVOLVING CENTRE OF

PHOTOSYSTEM II PREPARATION FROM SPINACH

SMITH P. ANU

11.30 BIO - FM5

THE CHLOROPLAST THYLAKOID MEMBRANE SYSTEM IS A

MOLECULAR CONVEYOR BELT

CRITCHLEY C. ANU

11.45 BIO - FM6

CHLOROPHYLL FLUORESCENCE AND PHOTONHIBITION

CLELAND R.E. ANU

12.00 BIO - FM7

LIGHT ABSORPTION AND SCATTER BY THYLAKOID

SUSPENSIONS

BROWN S. ANU

12.15 BIO - FM8

FAST TIME RESOLVED EPR AND ANISOTROPIC ELECTRON

SPIN POLARIZATION IN PHOTOSYNTHETIC REACTION

STEHLIK D. University Berlin

FRIDAY MORNING

8.30 Prof. O. Lounasmaa, Helsinki University of Technology

9.15 Dr. R. S. Pease, Culham Laboratory, U.K.A.E.A.

10.00 Morning Tea

10.30 SPECIALIST LECTURES

CONDENSED MATTER PHYSICS

Theatre LG1

Electrical Engineering Bldg

"Magnetism"

Chair Dr. B. Window

10.30 CMP - FM1 (INVITED)

MAGNETS, MICROCHIPS AND MEMORIES: FROM STATISTICAL

MECHANICS TO THE BRAIN

SHERRINGTON D.S Imperial College

(invited talk continues)

11.00 CMP - FM2

MAGNETIC STRUCTURE AND PROPERTIES OF THE Fe(X)MG(1

-X)O SOLID SOLUTIONS

ABBAS A. Monash Univ.

11.15 CMP - FM3

PHASE TRANSITION IN FCC IRON ANTIFERROMAGNETS

OITMAA J. UNSW

11.30 CMP - FM4

EFFECT OF ANNEALING ON THE MAGNETIC PROPERTIES

OF ZERO MAGNETOSTRICTION AMORPHOUS ALLOYS

SARWAR M. CSIRO Applied Physics

11.45 CMP - FM5

AC SUSCEPTIBILITY OF AS - QUENCHED AND LASER

ANNEALED METALLIC GLASSES

LEE S.J. A.D.F.A., UNSW

12.00 CMP - FM6 (INVITED)

AN AUST. SYNCHROTRON FACILITY?

WILKINS S. CSIRO DMST

(invited talk continues)

1.30

Dr. G. J. Troup, Monash University

"The Use of the Soft Palate in Bel Canto Singing"

GASEOUS ELECTRONICS

Dwyer Theatre

Chemistry Bldg

"Arcs and Plasma

Processing"

Chair Dr. J. Waymouth

10.30 GEM - FM1

TWO-DIMENSIONAL MODEL OF AN ARC TORCH

KOVITTA P. CSIRO Applied Physics

10.45 GEM - FM2

PRELIMINARY MEASUREMENTS OF TEMPERATURES IN

A DC PLASMA TORCH

SCOTT D.A. CSIRO Applied Physics

11.00 GEM - FM3

LOW CURRENT CASCADE ARC STUDIES

SIMPSON S.W. Univ. of Sydney

11.15 GEM - FM4

REVERSE POLARITY FREE-BURNING ARCS

HADDAD G.N. CSIRO Applied Physics

11.30 GEM - FM5

THE ELECTRIC ARC IN HIGH POWER ELECTRICAL

SYSTEMS - ITS UNWANTED ASPECTS

BLACKBURN I.R. Univ. of NSW

11.45 GEM - FM6

TIME RESOLVED TEMPERATURE MEASUREMENTS ON

FREE BURNING ARCS

FARMER A.J.D. CSIRO Applied Physics

12.00 GEM - FM7

A REVIEW OF BASIC PLASMA PHYSICS AND PLASMA

PROCESSING AT THE ANU

BOSWELL R.W. ANU

12.15 GEM - FM8

A MODEL OF A PULSED PLASMA ETCHING SYSTEM

BOSWELL R.W. ANU

FRIDAY MORNING

- 8.30 PLENARY LECTURE
Science Theatre
- 9.15 PLENARY LECTURE
Science Theatre
- 10.00 Morning Tea
- 10.30 SPECIALIST LECTURES

MEDICAL PHYSICS

Mellor Theatre
Chemistry Bldg
"Signal Analysis and
Medical Imaging"
Chair

- 10.30 MED - FM1 (INVITED)
★ PHYSIOLOGICAL MEASUREMENTS
HOLLEY L. NSWIT

(invited talk continues)

- 11.00 MED - FM2 (INVITED)
★ NEW ADVANCES IN DIAGNOSTIC ULTRASOUND
WILSON L.S. Ultrasonics Inst.

(invited talk continues)

- 11.30 MED - FM3 (INVITED)
★ NUCLEAR MEDICINE: IMAGING AND QUANTITATION OF
IN-VIVO BIOCHEMISTRY AND FUNCTION
HUTTON B.F. R.P.A. Hospital

(invited talk continues)

- 12.00 MED - FM4 (INVITED)
★ DIGITAL RADIOGRAPHY: CLINICAL DREAM OR PHYSICAL
REALITY?
MCLEAN D. Westmead

(invited talk continues)

- 1.30 LUNCHTIME LECTURE

Keith Burrows Theatre

FRIDAY MORNING

- 8.30 Prof. O. Lounasmaa, Helsinki University of Technology
- 9.15 Dr. R. S. Pease, Culham Laboratory, U.K.A.E.A.
- 10.00 Morning Tea
- 10.30 SPECIALIST LECTURES

NUCLEAR/PARTICLE PHYSICS

Hall A
Webster Bldg
"Particle Physics II"
Chair Prof. B. McKellar

- 10.30 NUP - FM1 (INVITED)
★ PHYSICS WITH VERY HIGH ENERGY HADRON COLLIDERS
ASTBURY A. Univ. of Victoria

(invited talk continues)

- 11.15 NUP - FM2 (INVITED)
COSMIC NEUTRINOS: A REVIEW
IRVINE J.M. Univ. of Manchester

(invited talk continues)

- 12.00 NUP - FM3
MASS OF THE ELECTRON NEUTRINO FROM SINGLE ELECTRON
EJECTION ...
TAYLOR G.N. Univ. of Melbourne

- 12.15 NUP - FM4
THE SEARCH FOR THE TOP QUARK
TOVEY S.N. Univ. of Melbourne

(invited talk continues)

- 1.30

Dr. G. J. Troup, Monash University
"The Use of the Soft Palate in Bel Canto Singing"

OPTICS

Murphy Theatre
Chemistry Bldg
"Lasers"
Chair Prof. H. Caulfield

- 10.30 OPT - FM1 (INVITED)
RECENT DEVELOPMENTS IN UV-VIS LASER SOURCES
PIPER J.A. Macquarie Univ.

(invited talk continues)

- 11.15 OPT - FM2
TEMPORAL AND SPATIAL POPULATION DENSITY
MEASUREMENTS IN A CU VAPOUR LASER
BROWN D.J. UNE

- 11.30 OPT - FM3
ATOMIC POPULATIONS OF CU AND GOLD IN A ROOM
TEMPERATURE METAL VAPOUR LASER.
ANDERS A.K. Monash Univ.

- 11.45 OPT - FM4
THE QUANTUM BEAT LASER
DALTON B.J. Univ. of Qld

- 12.00 OPT - FM5 (INVITED)
DOUBLE FOUR WAVE MIXING IN BARIUM TITANATE USING
MUTUALLY INCOHERENT LASER BEAMS
DUTHIE J.G. Univ. of Alabama

FRIDAY MORNING

- 8.30 PLENARY LECTURE Science Theatre
- 9.15 PLENARY LECTURE Science Theatre
- 10.00 Morning Tea
- 10.30 SPECIALIST LECTURES

SOLAR SPACE TERRESTRIAL B

Room G24
Electrical Engineering Bldg
"Space Physics"
Chair A/Prof B. Fraser

- 10.30 SST - FM1 (INVITED)
GIOTTO AND VEGA OBSERVATIONS OF COMET HALLEY
AXFORD W.I. MPAE, Germany

(invited talk continues)

- 11.00 SST - FM2
ASAS - AUSTRALIA'S WAY TO SPACE
SCHAETZEL S.S. Hawker de Havilland

- 11.15 SST - FM3
THE MIRROBOOKA X-RAY ASTRONOMY SATELLITE
EXPERIMENT
GREENHILL J.G. UNSW

- 11.30 SST - FM4
TERRESTRIAL OBSERVATIONS USING SPACEBORNE
SYNTHETIC APERTURE RADAR
MILNE A.K. UNSW

- 11.45 SST - FM5
PROJECT LYMAN: A NEW WINDOW FOR AUSTRALIAN SPACE
SCIENCE
DOPITA M. Mt Stromlo, ANU

- 12.00 SST - FM6
ON THE NEEDS FOR A SPACE BORNE RADIOMETER FOR
SOLAR-INTERPLANETARY STUDIES
STEWART R.T. CSIRO Radiophysics.

1.30

LUNCHTIME LECTURE

Keith Burrows Theatre

FRIDAY AFTERNOON

2.00 SPECIALIST LECTURES

BIOPHYSICS

Keith Burrows Theatre
Physics Bldg
"Theoretical Biophysics"
Chair Dr. Alex Hope

CONDENSED MATTER PHYSICS

Theatre LG1
Electrical Engineering Bldg
"Resonance and Spectroscopy"
Chair Dr. T. Hicks

- 2.00 BIO - FA1

(INVITED)
NMR DYNAMIC SPECTROSCOPY: THE IMAGING OF
DIFFUSION AND FLOW
SMITH J.R. Univ. of NSW

- 2.30 BIO - FA2

(invited talk continues)
BEYOND POISSON-BOLTZMANN: IMAGES AND CORRELATIONS
IN THE ELECTRIC DOUBLE LAYER
ATTARD P. A.N.U.

- 3.00 BIO - FA3

(invited talk continues)
YET ANOTHER CORRECTION TO THE POISSON-
BOLTZMANN EQUATION
DEMOISEAU E. Univ. of NSW

- 3.30 BIO - FA4

INFLUENCE OF THE ELECTRIC FIELDS ON MEMBRANE-
PORE STABILITY
GEORGE E.P. ????????

- 4.30 BIO - FA5

ELECTROPHYSIOLOGICAL BASIS AND IMPLICATIONS
OF MULTIPLICATIVE NONLINEAR LATERAL INHIBITION
PINTER R.B ANU

- 5.00 BIO - FA6

ENZYMES WHICH USE HEAT TO PRODUCE
ELECTROCHEMICAL GRADIENTS
GORDON L.G.M. Univ. of Otago

- 2.00 CMP - FA1

(INVITED)
NMR DYNAMIC SPECTROSCOPY: THE IMAGING OF
DIFFUSION AND FLOW
CALLAGHAN P.T. Massey Univ.

- 2.30 CMP - FA2

(invited talk continues)
RAMAN HETERODYNE SPECTROSCOPY OF EU3+ IN
KEU(HO4)2
FISK P.T.H. ANU

- 2.45 CMP - FA3

NMRON STUDIES OF 125SB IN SINGLE CRYSTAL IRON
HUTCHISON W.D. A.D.F.A., UNSW

- 3.00 CMP - FA4

THE MOSSBAUER LINE BROADENING IN AN FE-NI INVAR
ALLOY STUDIED BY THE SEM TECHNIQUE
PRICE D.C. CSIRO Applied Physics

- 3.15 CMP - FA5

ELECTRON SPECTROSCOPIC STUDIES OF IMPURITIES
IN ZIRCONIA-BASED CERAMICS
HUGHES A.E. CSIRO DMST

- 3.30 CMP - FA6

SURFACE COINCIDENCE AUGER ELECTRON SPECTROSCOPY
TODD B.D. Murdoch Univ.

- 3.45 CMP - FA7

ELECTRON SPIN RELAXATION IN GALLIUM ARSENIDE
MACKLIN W.C. Univ. of Western Australia

4.00

POSTER PRESENTATIONS AND REFRESHMENTS

FRIDAY AFTERNOON

2.00 SPECIALIST LECTURES

NUCLEAR/PARTICLE PHYSICS

Hall A
Webster Bldg
"Instrumentation and
Neutron Physics"
Chair A/Prof. L. Peak

OPTICS

Murphy Theatre
Chemistry Bldg
"Lasers and Optical Fibres"
Chair Dr. P. Hariharan

2.00 NUP - FA1 (INVITED)
APPLICATIONS OF NUCLEAR PHYSICS TO NUCLEAR
SAFEGUARDS
ENSSLIN N. Los Alamos Nat. Lab

2.00 OPT - FA1 (INVITED)
OPTICAL COMMUNICATIONS TODAY AND TOMORROW
LOVE J.D. ANU

(invited talk continues)

(invited talk continues)

2.30 NUP - FA2
THE 300 MEV PHOTON TAGGING SYSTEM AT THE
UNIVERSITY OF SASKATCHEWAN
O'REILLY G. Univ. of Melbourne

2.45 NUP - FA3
EFFECT OF PRE-ACCELERATION NEUTRONS ON THE
ENERGY SPECTRUM OF FISSION NEUTRONS
WALSH R.L. A.N.S.T.O.

2.45 OPT - FA2
SURFACE LASERS AND MODULATORS FOR OPTICAL
COMMUNICATION AND INTERCONNECTION
KEMENY P.C. Telecom

3.00 NUP - FA4
REVIEW OF THE 5YH AINSE NUCLEAR TECHNIQUES OF
ANALYSIS CONFERENCE
BOLDEMAN J.W. A.N.S.T.O.

3.00 OPT - FA3
THE COHERENT KALEIDOSCOPE
FROST B.S. Univ. of Qld

3.15 OPT - FA4
OCULAR HAZARDS OF OPTICAL RADIATION AND EYE
PROTECTION
SMITH G. Univ. of Melbourne

3.30 OPT - FA5
HIGH PERFORMANCE ND:YAG LASER
RICHARDS J. DSTO

3.45 OPT - FA6
SELF FOCUSING IN CADMIUM MANGANESE TELLURIDE
DAI X. Telecom Res. Labs.

4.00 OPT - FA7
TRANSVERSE SELF PHASE MODULATION EFFECTS WITH
NEMATIC LIQUID CRYSTAL FILMS
HERMAN J.A. DSTO

16.15 OPT - FA8
PRECISION MEASUREMENT OF THE REFRACTIVE INDEX
OF AIR
CIDDDOR P.E. CSIRO Applied Physics

FRIDAY AFTERNOON

2.00 SPECIALIST LECTURES

GASEOUS ELECTRONICS

Dwyer Theatre
Chemistry Bldg
"Lasers and
Plasma Processing"
Chair Prof. H. Tagashira

MEDICAL PHYSICS

Mellor Theatre
Chemistry Bldg
"Therapeutic Methods"
Chair

2.00 GEM - FA1
PLASMA CHEMISTRY OF SF6
RYAN K.R. CSIRO Applied Physics

2.00 MED - FA1 (INVITED)
NEW GENERATION LINEAR ACCELERATORS
DREW J. Westmead Hospital, Sydney

2.15 GEM - FA2
ETCHING IN AN EXTERNALLY EXCITED PLASMA
VENDER D. ANU

(invited talk continues)

2.30 GEM - FA3
ETCHING IN A MULTIPOLE CONFINEMENT DIFFUSION
PLASMA
DURANDET A. ANU

2.30 MED - FA2 (INVITED)
HYPERTHERMIA FOR CANCER TREATMENT
KNITTEL T. Prince of Wales Hospital

(invited talk continues)

2.45 GEM - FA4
SPECTROSCOPIC MEASUREMENTS OF THE ENERGY OF
SPUTTERED COPPER ATOMS
TURNER G.M. Univ. of Sydney

3.00 MED - FA3
A STUDY OF PHOTONUCLEAR REACTIONS IN TISSUE:
APPLICATION OF NUCLEAR PHYSICS TO MEDICAL SCIENCE
ALLEN P.D. Aust. Radiation Labs.

3.00 GEM - FA5
SPUTTER DEPOSITION IN A DIFFUSION PLASMA
PERRY A. ANU

3.15 GEM - FA6
DESIGN CONSIDERATIONS FOR PRACTICAL METAL
VAPOUR LASERS
MCINTOSH A.I. Metalaser Ltd

3.30 GEM - FA7
THE INTERPRETATION OF OPTOGALVANIC EFFECTS
FOLLOWING LASER INDUCED PERTURBATIONS OF NEON
ERNEST A.D. UNE

3.45 GEM - FA8
LASER R&D PROGRAMS IN SOUTH AUSTRALIA
PUGATSCHEN A. S.A.I.T.

4.00 GEM - FA9
A TECHNIQUE FOR THE DIRECT MEASUREMENT OF RF
EXCITED DISCHARGE IMPEDANCES
COOPER S.J. Univ. of Qld

4.15 GEM - FA10
LONGITUDINAL AND TRANSVERSE GAIN IN BASIL II
ZHU P.Y. ANU

2.00 SPECIALIST LECTURES

SOLAR SPACE TERRESTRIAL A
Room G24
Electrical Engineering Bldg
"Geomagnetic Variations
and VLF"

Chair Dr. E. M. Pouiter

2.00 SST - FA1 (INVITED)
GEOMAGNETIC REFERENCE FIELDS
BARTON C.E. Bureau of Mineral Resources

(invited talk continues)

2.30 SST - FA2
TWO DIMENSIONAL SURFACE IMPEDANCE MEASUREMENTS
AT VLF
THIEL D.V. Griffith Univ.

2.45 SST - FA3
GEOMAGNETIC VARIATIONS ON MACQUARIE ISLAND
AND HEARD ISLAND
CHAMALAUN F.H. Flinders Univ.

3.00 SST - FA4
GEOMAGNETIC FLUCTUATION ANOMALIES ACROSS THE SE
AUSTRALIAN COAST
KELLETT R.L. ANU

3.15 SST - FA5
DAY- TO DAY VARIABILITY OF SR OCCURS ON A GLOBAL
SCALE
HIBBERD F.H. UNE

3.30 SST - FA6
IONOSPHERIC CURRENT PATTERNS DRIVEN BY THE
(2,3) ANTISYMMETRIC TIDAL MODE
STERNING R.J. Univ. of NSW

3.45 SST - FA13
ENERGY DEPOSITIONS AND TURBULENT DIFFUSION IN THE
MIDDLE ATMOSPHERE AS OBSERVED BY RADAR TECHNIQUES
HOCKING W.R. Univ. of Adelaide

4.00 POSTER PRESENTATIONS AND REFRESHMENTS

SOLAR SPACE TERRESTRIAL B

Room G25
Electrical Engineering Bldg
"Middle Atmosphere"
Chair Dr. W. Hocking

2.00 SST - FA7 (INVITED)
THE ANTARCTIC HOLE: THE INTERPLAY OF ATMOSPHERIC
CHEMISTRY AND DYNAMICS
FRASER P.J. CSIRO Atmospheric Research

(invited talk continues)

2.30 SST - FAB
OPTICAL OBSERVATIONS OF THE SODIUM LAYER
GREET P. Univ. of Adelaide

2.45 SST - FA9
ROCKET OBSERVATIONS OF GRAVITY WAVES IN
THE UPPER STRATOSPHERE OVER HOONERA
ECKERMANN S.D. Univ. of Adelaide

3.00 SST - FA10
COMPUTER SIMULATION OF THE SPACED ANTENNA
TECHNIQUE FOR DETERMINATION OF ATMOSPHERIC MOTIONS
LESICAR D. Univ. of Adelaide

3.15 SST - FA11
LUNAR TIDAL MEASUREMENTS IN THE MIDDLE
ATMOSPHERE
STERNING R.J. Univ. of NSW

3.30 SST - FA12
NUMERICAL MODELLING OF GRAVITY WAVES IN THE
MIDDLE ATMOSPHERE
ECKERMANN S.D. Univ. of Adelaide

4.00 POSTER PRESENTATIONS AND REFRESHMENTS

Condensed Matter Physics

4.00 CMP - PF1
PULSED NUCLEAR QUADRUPOLE RESONANCE
BOWDEN G.J. UNSW

4.00 CMP - PF2
NUCLEAR SPIN RELAXATION DUE TO QUADRUPOLE
INTERACTIONS AND TRANSLATIONAL DIFFUSION
KELLY S.H. Univ. of New England

4.00 CMP - PF3
EXCITATION OF TRIPLE QUANTUM NMR COHERENCES
IN SOLIDS BY HARD RF PULSES
HUTCHISON W.D. UNSW

4.00 CMP - PF4
EPR STUDIES OF LOW SYMMETRY PARAMAGNETIC
CENTRES
RUDOWICZ C. ANU

4.00 CMP - PF5
MEDIAN AXIS DETERMINATION FOR LOW SYMMETRY SPIN
1/2 SPECTRA
FREEMAN I.E. Macquarie Univ.

4.00 CMP - PF6
MONOCLINIC EPR SPECTRA OF GD³⁺ IN RCL3.6H₂O -
LOW SYMMETRY ASPECTS
MISRA S.K. ANU

4.00 CMP - PF7
HIGH RESOLUTION EPR STUDY OF NATURAL AND
SYNTHETIC EMERALDS
HUTTON D.R. Monash University

4.00 CMP - PF8
A LINE SATELLITE OF THE L1 DOUBLETS OF 17CL
THROUGH 22TI
CRISP R.S. Univ. of W.A.

4.00 CMP - PF9
OPTICALLY STIMULATED LUMINESCENCE IN QUARTZ
FOX P. Univ. of Adelaide

4.00 CMP - PF10
OPTICAL PROPERTIES OF SINGLE CRYSTALS
PROUSTITE AG3As3S3
YANG S. Univ. of NSW

4.00 CMP - PF11
PIEZOSPECTROSCOPY OF THE CLINE OF GA IN GE
VICKERS R.E.M. Univ. of Hologong

4.00 CMP - PF12
PHOTOTHERMAL DEFLECTION SPECTROSCOPY OF
SEMICONDUCTORS
EYLAND P. Univ. of NSW

4.00 CMP - PF13
THE MECHANISM FOR PHOTOPHYSICAL SPECTRAL
HOLEBURNING IN U-DOPED STRONTIUM TUNGSTATA
HOLLIDAY K. ANU

4.00 CMP - PF14
GROUND STATE SPLITTINGS AND MIRROR SITE TO
INVERSION SITE ENERGY TRANSFER IN ALEXANDRITE
HASAN Z. ANU

4.00 CMP - PF15
THE RAMAN SPECTRUM OF CESIUM THIOCYANATE
BLANCHONNETTE I. Monash Univ.

4.00 CMP - PF16
LOW TEMPERATURE RAMAN SCATTERING OF 12 MOL% CE-TZP
CHENG G.X. Monash Univ.

4.00 CMP - PF17
CORE LEVEL IONIZATION IN THE AUGER ELECTRON
SPECTROSCOPY OF SOLIDS
PAYLING R. BHP

4.00 CMP - PF18
INDIRECT EXCHANGE INTERACTION BETWEEN NUCLEAR
MOMENTS IN CU
FRISKEN S.J. Univ. NSW

4.00 POSTER PRESENTATIONS AND REFRESHMENTS

FRIDAY POSTER

4.00 POSTER PRESENTATIONS AND REFRESHMENTS

- 4.00 CMP - PF19
THE COUPLED SPIN-1/2 PROBLEM
BOWDEN G.J. UNSW
- 4.00 CMP - PF20
HIGH TEMPERATURE DYNAMICS OF QUANTUM SPIN SYSTEMS
OITMAA J. UNSW
- 4.00 CMP - PF21
RPA TREATMENT OF QUASI-1D AND 3D ANTIFERROMAGNETS
BOWDEN G.J. UNSW
- 4.00 CMP - PF22
RESISTIVITY STUDIES OF SAMARIUM
THOMPSON P.H. ADFA
- 4.00 CMP - PF23
PLASTIC FLOW IN ION ASSISTED DEPOSITION OF
REFRACTORY METALS
WINDON B. CSIRO Applied Physics
- 4.00 CMP - PF24
LOW TEMPERATURE SPECIFIC HEAT STUDY OF MAGNETIC
TRANSITIONS IN HOLMIUM AND SAMARIUM
COLLOCOTT S. CSIRO Applied Physics
- 4.00 CMP - PF25
THERMAL EXPANSION OF FE₂MNSI
MILES J.R. Monash Univ.
- 4.00 CMP - PF26
LASER TREATMENT OF METALLIC GLASSES
RADLINSKI A.P. ANU
- 4.00 CMP - PF27
LOCAL VALUE OF AVRAMI EXPONENT IN DEVITRIFICATION
OF METALLIC GLASSES
CALKA A. ANU
- 4.00 CMP - PF28
STUDIES FROM LUMINESCENCE FROM DEFECTS CREATED
BY PULSED ELECTRON IRRADIATION IN ALKALINE
BOAS J.F. Aust. Radiation Labs.
- 4.00 CMP - PF29
DIFFUSE NEUTRON SCATTERING ON THE NIOBIUM
DEUTERIUM SYSTEM
OSBORN J.C. Monash Univ.
- 4.00 CMP - PF30
FINER FEATURES IN THE MAGNETIC ORDERING OF
HOLMIUM
KOPP M.P.
- 4.00 CMP - PF31
SPIN COHERENCE IN RELAXED EXCITED TRIPLET AND
QUARTER STATES IN SIMPLE OXIDES
GLASBECK M. Univ. of Amsterdam
- 4.00 CMP - PF32
PHOTOCHEMICAL H-ELIMINATION AND HOLE BURNING IN
SOLID STATE REACTIONS
STEIDL P. Free Univ. Berlin

1. PAPER CHANGES:

FIRST AUTHOR FROM TO

Sarwar M. CMP-FM4
Standish R. GRA-TA2
Harvey E. OPT-PW6
Niesler H. ACO-TM3
Campbell J. EDU-WM5
Powe J. EDU-WM6
Francey J.L. GEM-WM7
Muller K.H. OPT-PW18
Lowke J.J. APH-WM1
Hobbs R. APH-WM2
Finlayson T. CMP-PM10
Kovitya P. GEM-FM1
Scott D. GEM-FM2

2. WITHDRAWALS

Prytz A. GEM-TA6 Nurzynski J. NUP-MA2
Moore G. GRA-TM4 Duthie OPT-FM5
Caulfield H. OPT-TA4 White G. CMP-PM1
Clark D.L. AMQ-PT16

3. POSTDEADLINE PAPERS:

C.P. Foley, R.K. Day and J. Dunlop: "The effects of alloying elements on the properties of amorphous Fe-X-Si-B alloys"
CMP-FM4

C.P. Foley: "Why girls (and boys) don't do physics it's boring"
EDU-WM5, PM9

D.D. Richardson, E.D. Northeast and P.F.X. Ryan: "The exploding foil flying plate generator"
APH-PW8

D. Kivelson: "Liquid dynamics near the glass transition"
CMP-PM10

Z. Kviz: "Activity of RZ Eridani"
OPT-PW6

Xu Deyan: "Production of Astronomical mirrors in China: testing results for a 1.56m mirror"
OPT-PW18

G. Christiansz et al: "Growth and characterization of CdTe and HgCdTe on GaAs by low temperature MOCVD"
CMP-PF36

M. Welch and D. Bailey: "Using Moire fringes to teach physics"
EDU-PM7

T.G. Emeleus and D.E. Bailey: "Performance of 1st year physics students at Nepean CAE in 1987"
EDU-PM8

Change of Title: (AMQ-WM2) J.A. Pople, M. Head-Gordon, and K. Raghavachari: "Quadratic configuration interaction. A general technique for determining electron correlation energies"