

## U.R.S.I.

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IN MEMORIAM

J. S. SHIRKE  
1927-1981

With great sorrow, we note the sudden death of Prof. J.S. Shirke at San Juan, Argentina on the night of 21 May 1981. He died in sleep of cerebral haemorrhage.

Prof. Shirke joined the Physical Research Laboratory (Ahmedabad) in January 1956 as a research assistant and rose to be Associate Professor. His scientific career spanning nearly 25 years contained many and varied contributions to the field of aeronomy. Starting with the study of radiowave absorption in the ionosphere, he was responsible for the initiation of a number of experimental programmes at PRL. Indeed he was one of the pioneers in the group which initiated a wide range of research techniques and programmes in ionospheric physics at PRL, and his contributions to the world-wide fame of this Laboratory were substantial and crucial. He worked on both ground-based as well as rocket-borne projects, and his latest results on coupling of the lower (D-region) ionosphere to the processes in the highest (F-region) layers of the ionosphere were outstanding contributions to the subject. He developed mass-spectroscopes to be carried on rockets for studies of ionic constituents of the upper atmosphere for the first time in India. He was also responsible for the initiation and conduct of a number of important experimental programmes in USA where he spent a couple of years as a post-doctoral fellow. Prof. Shirke served on various national committees devoted to Radio Science and Aeronomy, and was involved in a number of international programmes as well.

Prof. Shirke had gone to Argentina on 28 March 1981 to take over the directorship of Centro de Fisica de la Alta Atmosfera in San Juan. His last letters to colleagues here were full of high hopes and plans to initiate and develop many different programmes of research at that Institute. Unfortunately his life was cut short at a young and promising age.

Professor Shirke leaves behind his wife and two young daughters. We humbly share in their grief.

S.P. Pandya  
Deputy Director  
Physical Research Laboratory  
Ahmedabad .

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The Observatorio del Ebro has the deep sorrow to announce the sudden death of

Rev. Fr. ANTONIO ROMANA, S.I.  
(21 March 1900 - 13 October 1981)

He was Director of the Observatorio del Ebro from 1939 to 1970.

His scientific work comprised not only the task of rebuilding the Observatory after the war, accommodating it to the new needs of solar-terrestrial research, but also an active international cooperation through ICSU, IAU, URSI, IUGG and other scientific bodies. Specially his work in the frame of IAGA scientific committees and meetings, and as Director of the Service on Rapid Magnetic Variations is well known.

He was member of several learned societies throughout the world.

The staff of the Observatorio del Ebro who had the privilege of living and working with this deep religious man for many years, feel the loss not only of a scientific colleague but, above all, of a good and personal friend.

May he rest in peace.

J.O. Cardus S.I.  
Director.

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URSI INTER-COMMISSION WORKING GROUP  
ON TIME DOMAIN WAVEFORM MEASUREMENTS

At the XX General Assembly of URSI in Washington, D.C. Commission A proposed the creation of a Working Group on Time Domain Waveform Measurements, and motivated its recommendation by the fact that fast pulses are important to:

- radio science in transient electromagnetic fields in scattering and geophysical studies;
- radar, telecommunications and computers, e.g., in remote sensing; data acquisition, transmission and processing; high speed electronic devices and circuits;
- measurement and instrumentation in relation to measurement methods, oscilloscopes/optical streak cameras, detectors, sensors.

As these topics are of interest to a large number of URSI Commissions, the Board of Officers decided to give the Working Group an Inter-Commission status, and asked Dr. N.S. Nahman to serve as its Chairman. Dr. Nahman has written the following summary of the purpose of the Group.

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1. Introduction

Generally, a time domain waveform measurement is one that measures the temporal evolution of a transient or pulsed event. The word measurement implies the determination of the true evolution with time of the physical event. Furthermore, a recording or acquisition of a waveform does not necessarily insure that the data record truly represents the physical event. Consequently, a true measurement procedure requires a careful analysis and design of (1) the measurement system and (2) the data reduction algorithms necessary to remove the measurement system distortion effects.

Time domain measurements are required when the waveform or evolution in time is of paramount importance, such is the case for pulsed events or transients. Frequency domain or steady state measurements are not generally applicable to measurements of transient phenomena.

2. Background

Within the URSI Commissions there are many experiments

and applications which employ time domain waveform measurements of transient signals produced by linear and non-linear systems. For example, some typical time domain measurement activities include:

- Pulsed circuits and field measurements (Comm. A);
- Time domain scattering and antenna measurements (Comm.B);
- Time domain measurements of digital system components and transmission (Comm.C);
- Electronic and optical device pulse measurements(Comm.D);
- Time domain measurements of interference and noise (Comm. E);
- Remote sensing measurements using time domain methods (Comm.F);
- Measurements on soliton propagation in plasma (Comm's G and H);
- Time delay measurements (Comm. J).

The common factor in this myriad of applications is the requirement to determine the true transient signal from the recorded transient waveform. In each application the measurement system hardware and methods will depend upon the time scale involved, e.g., in geophysical situations relatively large times, second to minutes or longer, while for some electrical and optical electronic applications, picoseconds or less. However, the methods used by researchers in one region of the electromagnetic spectrum will generally be different from those in other regions. Consequently, bringing together these researchers will allow and enhance an exchange of ideas which in turn will stimulate the advance of the state of knowledge in time domain waveform measurements, and applications thereof. Furthermore, it should be kept in mind that the terms fast, rapid, or high-speed as applied in different technical areas are relative; compared to some other area, a given fast phenomenon may be slow, etc. Finally, with respect to the general interest in such measurements, the CNET 1978 Summer School in Lannion, France was devoted to the theory and practice of temporal measurements with applications to the characterization of materials, devices and systems; the Summer School attracted attendees from Africa, Europe, Mideast, Orient, and America.

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The Inter-Commission Working Group is now being formed, and its composition will be announced in a forthcoming issue of the Bulletin.

## WORKING GROUP ON ACTIVE EXPERIMENTS (H2)

Since its birth at the Lima URSI General Assembly in 1975 and under the chairmanship of Dr. Chris Russell, this Working Group has served many of the purposes of an Inter-Union Working Group despite its being formally constituted in URSI Commission H only. This is because a chemical release in the magnetosphere, for instance, involves techniques within the preserve of COSPAR but produces waves in plasma, of obvious interest to URSI Commission H. In this spirit a very successful three-day Symposium was held by the Working Group at the Budapest COSPAR Meeting in 1980. Most of the papers have since been published in Advances in Space Research (Vol.1, 1981) and an excellent summary of the work presented at the Symposium has been given by Dr. Michael Rycroft in Nature (Vol.287, p.7, 1980).

However the purpose of this note is not to argue for the Working Group to become inter-Union formally, but to point out a service which the Working Group provides. This is to enable active experimenters to advise the wider community of passive observers about impending events. Such a service is becoming increasingly important because of the rapid increase in the number of active experiments such as those planned using the Space Shuttle. Perhaps this is the beginning of a new era of cooperative research analogous to that typified by the IGY except that the largely unpredictable and capricious natural events used then are replaced by predictable man-caused events. Thus the Working Group service is to some degree the counterpart of URSIGRAMS.

It is likely that the needs of such a service will eventually outstrip the resources available to me, but at present the service is free for all members who are simply everyone who send me their names and addresses. It works like this. An active experimenter sends me the details of his coming experiment, typed compactly on A4 ready for copying, together with his estimate of the latest date this information will be of use to recipients. I make the copies and add as an appendix to an Active Experiments Newsletter which is then airmailed to all members in good time. The Newsletter does not have a deadline (news is welcome any time) because usually each issue is triggered by the needs of its appendix. So far there has been only

one issue per year but this will be increased as required.

Physics Department  
University of Otago  
Dunedin, New Zealand.

R.L. Dowden  
Chairman, Active Experi-  
ments Working Group.

Telex: NZ5619 ("DNPUBTX")

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IAGA EDINBURGH ASSEMBLY  
August 1981

The Resolutions reproduced below have been adopted by IAGA at its Assembly in Edinburgh (August 1981) and are of interest to the URSI community.

1. IAGA, noting that a proposal is to be made to URSI that a feasibility study should be made for a containerised Southern Hemisphere Incoherent Scatter Facility (SHISCAT) and noting that the scientific results obtainable with such a facility would be of great interest, recommends that such a feasibility study be made and requests URSI to keep IAGA informed of progress in this project.
2. IAGA, noting that the World Data Centers for Solar-Terrestrial Physics have, in the past, played a vital rôle in helping to provide IAGA scientists with primary and support data necessary for them to carry out their research effectively, and noting that the success of the data analysis phases of the International Magnetospheric Study and the upcoming Middle Atmosphere Programme are strongly dependent on the continued availability of the large data archives handled by the World Data Centers, strongly recommends that national agencies which house and support the World Data Centers do all in their power to ensure that the high standards of data archiving and dissemination achieved by these organizations in recent years are maintained and, if possible, upgraded over the coming decade.
9. IAGA, noting that most radar meteor systems are now automated, considering the need for a more effective geographical distribution of radar meteor stations and



recognizing the high degree of coordination necessary to undertake simultaneous world-wide observations, recommends that

- (1) IAGA member countries be encouraged to support and extend the radio meteor network,
- (2) international coordination be undertaken through a Global Meteor Observation System (GLOBMET) and that this coordination be effected in the immediate future through the Middle Atmosphere Programme in SCOSTEP,
- (3) a committee be formed within SCOSTEP with representatives from IAGA, IAMAP, IAU and URSI to produce a GLOBMET planning document.

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#### INTERNATIONAL SYMPOSIUM ON TIME AND FREQUENCY

The International Symposium on Time and Frequency was held at the National Physical Laboratory (NPL), New Delhi, India from 10-12 February 1981 with the cooperation of the Bureau International de l'Heure (BIH) and the International Consultative Radio Committee (CCIR), and cosponsored by URSI, ITU and several domestic organizations. There were nearly 200 delegates to the meeting, which was organized by Dr. B.S. Mathur, NPL.

As many as 70 papers were presented on, for example, frequency standards, time scale generation, dissemination and comparison of time and frequency and circuit techniques. Particularly interesting items were:

- (1) Accuracy of TAI (international atomic time determined by BIH) and its relation with the instabilities of individual clocks due to change of environment.
- (2) Development of cesium primary frequency standards of high accuracy (of the order of  $10^{-14}$ ) in Canada.
- (3) Development of field operable hydrogen maser of high short-term stability ( $\approx 1 \times 10^{-15}$  for 2000 seconds) in the United States.
- (4) Up-to-date techniques of precise time comparison via GPS (Global Positioning System), space shuttle, LASSO

(Laser Synchronization from Stationary Orbit) and so on.

- (5) Activities in India, e.g. application of the standard-frequency and time-signal transmission, ATA, in various fields of science, in particular the precise international time comparison via VLF and satellites.
- (6) Panel discussion "Cooperation between developed and developing countries" (chairman: Dr. A.R. Verma, NPL).

The Symposium was held in Asia for the first time, and served a very worthwhile purpose in the field of international cooperation.

Y. Yasuda

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### THIRD INTERNATIONAL CONFERENCE ON INTEGRATED OPTICS AND OPTICAL FIBER COMMUNICATION

This International Symposium was held from 27-29 April 1981 in San Francisco, USA and was the third in the series (Tokyo 1977; Amsterdam 1979). It was organized by the Optical Society of America and The Institute of Electrical and Electronics Engineers, in cooperation with Japanese and Western Europe Electronics Societies. The fourth Symposium will be held in Tokyo in 1983. The Chairman of the Programme Committee was Dr. M.K. Barnoski. The San Francisco Conference was a major scientific event mainly in the field of optical fiber technology and communication. It gathered more than 1000 attendees in the magnificent Hyatt Regency Hotel with its very convenient technical and social arrangements. The digest of the technical papers is available through IEEE (Catalog No81 CH 1649-3).

The programme of the Conference comprised the following sessions: Cable 1; Short wave sources 1,2; Field installations, transmission techniques 1, 2,3; Strength and ultra long-wavelength fiber 1, 2; Source characteristics 1, 2; Long-wavelength sources and detectors 1, 2; Single mode fiber 1, 2; Wavelength devices 1, 2; Couplers, coupling and switches, materials and fiber processing 1,2; Integrated optics 1, 2; Splices and connectors, reflecto-

metry techniques, fiber 1, 2; Guided-wave signal processing 1, 2; Fiber sensors 1, 2. All together about 190 papers were presented, including 30 invited papers and 11 post deadline contributions.

Papers were presented in three parallel sections, however the strictly observed timetable enabled attendance of chosen papers at different sessions. The highlights of the Conference were:

- 1) The main interest is shifted to longer wavelengths; many new projects make use of the 1.3  $\mu\text{m}$  wavelength where the sources and detectors are now commercially available.
- 2) The single mode transmission in the dispersion compensated fibers at the lowest attenuation window of 1.55  $\mu\text{m}$  opens new transmission possibilities; however, it is a really different and more difficult technology, but the sources and detectors exist.
- 3) There is a world-wide interest in new materials for even longer wavelengths. Thallium bromide iodide shows at 4-5  $\mu\text{m}$  an incredibly low attenuation of 0.001 dB/km. Until today no sources and no detectors for that wavelength range.

During the Conference an exhibition was organized in which the progress in technology of fibers, optoelectronic devices and measuring equipment was presented. The newest technical literature was also shown. Computerized glass working lathes and fiber drawing tower systems attracted the attention of all attendees.

A. Smolinski

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#### WAVE DYNAMICS AND RADIO PROBING OF THE OCEAN SURFACE

The 8th Symposium of the Inter-Union Commission on Radio Meteorology (IUCRM) was held in Miami Beach, Florida USA from 13-20 May 1981. The topic of the Symposium was "Wave dynamics and radio probing of the ocean surface". The purpose of the Symposium was to review in depth the theoretical, experimental and observational developments of the past few years and the presentation of new research

results in basic wave dynamics, dynamics of wind-wave spectra and interactions with oceanic structures, measurements and analysis techniques including microwaves, HF techniques and classical methods, "inverse" modelling, wave prediction and related topics such as oceanic turbulence and upper ocean layer dynamics.

This IUCRM Symposium, in contrast to previous ones (except for the one in Venice, Italy last year), was "open" and attended by 181 (the estimated count was closer to 200) registered scientists and other observers; 2/3 were from the USA. The attendance included oceanographers, meteorologists, geophysicists and about 1/3 radio scientists from 15 countries.

The opening ceremonies on 13 May included introductory remarks by Sir George Deacon and key note addresses by Drs Herbert Rabin (Deputy Assistant Secretary of the US Navy), William Rainey (Deputy Administrator for Science and Applications of NASA) and Ferris Webster (Assistant Administrator for Research and Development of NOAA).

The technical programme included 6 review papers, 61 research contributions, one Open Workshop and 30 poster papers. The Proceedings of the Symposium, including comments and discussions during the presentations will be published by Plenum Press in book form with K. Hasselmann and O.M. Phillips serving as editors.

Overall, this IUCRM Symposium was a great success, helping to bring together once more oceanographers and radio scientists on the one hand, and theoreticians and experimentalists on the other. One of the main outputs of this Symposium was the demonstration that remote sensing techniques now are widely accepted by oceanographers and geophysicists, and a number are planning to use these techniques in future experiments. The main interests in the field now seem to be in nonlinear processes of the surface wave field, the directional spectrum of ocean waves, and in the validation of wave prediction models.

In the afternoon of the last day of the Symposium, an Open Workshop on Wave Model Intercomparison took place. K. Hasselmann was the organizer of the Workshop with the purpose to test the numerics and physics of a number of wave prediction models using discrete spectral, parametric and parametric/hybrid methods. The participant models were: the NOAA/AOQL, the GONO from KNMI (Netherlands), the

Japan Meteorological Agency, the CNR (Italy), the UK Meteorological Office, the Norwegian, the Tohoku (Japan) and the Hamburg (FR Germany).

From a report by G.R.Valenzuela

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#### FIFTIETH ANNIVERSARY OF THE SWEDISH COMMITTEE

The Swedish URSI Committee celebrated its fiftieth anniversary by organizing a two-day Symposium in Stockholm on 30 September and 1 October 1981. This event, held under the chairmanship of Prof. S. Lundquist, Chairman of the Swedish Committee and of Commission E, was attended by some 160 scientists, among whom several URSI personalities such as the former URSI Commission Chairmen Lundbom and Eklund, the former President of the Swedish Committee Sterky and the present Vice-President Weissglass. At the opening session, a most interesting introductory word was said by the Minister of Education, J.E.Wikström, and memories of the development of Radio in the twenties and thirties were evoked. Mr. Åkerlind, Secretary of the Swedish URSI Committee from 1964 to 1979, received the Linné Medal of the Swedish Academy of Sciences, after which the Secretary General of URSI, who had been graciously invited to the meeting, gave a short account of the highlights of the Washington General Assembly. The programme continued with a lively panel discussion, devoted to "Radio and Telecommunications in the year 2000 and later", led by the known TV scientific commentator B. Feldreich, familiar to those who follow the interviews with the Nobel Prize laureates; some members were Prof. Lundquist, Mr. G. Lindberg (Technical Director of LM Ericsson), Prof. G. Hoppe (Past President of the Swedish Academy of Sciences), Prof. O. Rydbeck (founder of the Onsala Space Observatory), and Mr. A. Rhodin (Technical Director of the Swedish Radio Corporation).

The main body of the programme consisted of two symposia, one devoted to "Components for Microelectronics", the other to "Propagation above 10 GHz".

A very well produced brochure, describing the activities of the Swedish Committee since its creation in

1931, was distributed to the delegates.

J. Van Bladel

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#### FUTURE USNC-URSI MEETINGS

The US URSI Committee announces the following meetings:

- 1982 13-15 January. National Radio Science (USNC/URSI) Meeting, University of Colorado, Boulder, Colorado, USA. Deadline: 1 October 1981. Contact: Prof. S.W. Maley, Department of Electrical Engineering, University of Colorado, Boulder, CO 80309.
- 24-28 May. National Radio Science, IEEE Antennas and Propagation Society, and Nuclear Electromagnetic Pulse Meetings, University of New Mexico, Albuquerque, New Mexico, USA. Deadline: 4 January 1982. Contact: Dr. C.E. Baum, AFWL, Kirtland Air Force Base, Albuquerque, New Mexico 87117.
- 1983 23-28 May. National Radio Science and IEEE Antennas and Propagation Society Meetings, University of Houston, Houston, Texas, USA. Contact: Prof.S.A. Long, University of Houston.
- 1984 17-22 June. National Radio Science and IEEE Antennas and Propagation Society Meetings, Northeastern University, Boston, Massachusetts, USA. Contact: Dr. A.C. Schell, Hanscom Air Force Base, Bedford, MA 01730.

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#### NATIONAL RADIO SCIENCE MEETING May 1982

#### Call for Papers

The National Radio Science Meeting sponsored by the USNC/URSI Commissions indicated below will be held on the campus of the University of New Mexico, Albuquerque,

24-28 May 1982.

Suggested Topics for URSI Commissions

Commission B (Fields and Waves)

- Scattering and Diffraction
- High Frequency Asymptotic Methods
- Analytic and Numerical Techniques
- Propagation in Random Media
- Optical Waveguides
- Inverse Scattering

Commission E (Electromagnetic Noise and Interference)

- Interference and its Suppression
- Characterization and Modeling of Noise and Interference
- Natural and Man-Made Noise
- Effects of Noise on System Performance

Commission F (Wave Phenomena in Non-ionized Media)

- Radio Meteorology
- Remote Sensing
- Effects of Random Media
- Applications to Telecommunications
- Theoretical and Experimental Studies of Wave Propagation.

Abstracts should be limited to one page. Submit an original and three copies, stating Commission preference, to:

Chris Jones,  
The Dikewood Corporation,  
1613 University Blvd. N.E.,  
Albuquerque, New Mexico 87102,  
USA.

All summaries and abstracts must be received before  
4 January 1982.

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1982 INTERNATIONAL CONFERENCE  
ON PLASMA PHYSICS

The 1982 International Conference on Plasma Physics is hosted by the Chalmers University of Technology, and will be held from 9 to 15 June 1982 at The Swedish Trade Fair Foundation.

The Conference has as principal sponsor the International Union for Pure and Applied Physics (IUPAP), and it is cosponsored by a number of organizations among which URSI, the International Astronomical Union, EURATOM-FUSION, The European Physical Society, The Royal Swedish Academy of Sciences.

The conference programme will have an emphasis on problems with relevance to hot plasmas. Special attention will be paid to the fields of fusion plasma physics and space and astro plasma physics. In particular basic problems in plasma theory and experiments on waves and instabilities, transport phenomena, nonlinear effects, turbulence, stochasticity, coherence and particle acceleration will be considered.

In addition to the invited talks, contributed papers will be accepted on the basis of a four-page manuscript. The manuscripts should be sent, before 1 March 1982, to the following address:

1982 International Conference on Plasma  
Physics,  
Scientific Secretariat,  
Chalmers University of Technology,  
S - 412 96 Göteborg, Sweden.

The invited talks will be published in a special issue of Physica Scripta and Europhysics Journal.

All correspondence concerning the final registration, programme, travel and accommodation should be sent to the:

Conference Secretariat,  
Swedish Trade Fair Foundation,  
P.O.Box 522,  
S - 402 24 Göteborg, Sweden.



OPEN SYMPOSIUM ON MULTIPLE-PARAMETER-RADAR  
MEASUREMENTS OF PRECIPITATION

The URSI Open Symposium on Multiple-Parameter-Radar Measurements of Precipitation will be held from 23 to 27 August 1982 in Bournemouth, United Kingdom. It is co-sponsored by the IEE and organised by the Rutherford and Appleton Laboratory.

Theme

During the last few years there have been very notable developments in multi-parameter radars and their use for determining the microstructure of precipitation. The particular radar types may be grouped as:

- Dual frequency
- Dual polarisation -copolar - differential reflectivity
- Differential phase/reflectivity
- Vertical - component doppler/reflectivity.

Particular merits of the new radars and uses to which they have been put are:

- i. to examine the statistical distribution of rain drop sizes and thereby improve the accuracy in determining rainfall rates, drop impacts and specific attenuation due to rain;
- ii. to distinguish rain from ice forms and examine ratios of hydrometeor forms;
- iii. to distinguish precipitation from ground echoes.

The Symposium will be concerned with the following topics:

- a. Techniques
- b. Observations
- c. Applications.

Evening workshop sessions will be held on the first two of these topics.

General Information

The meeting will be residential and extend from the evening of 23 August to the morning of 27 August. It is expected that about 30 papers will be presented. Facilities will be available at the Symposium for 35 mm slides,

16 mm film and overhead projection. Selection of the papers will be based on synopses received and authors will be notified of selection early in March. Symposium authors will be invited to submit their papers for publication in a special issue of Radio Science which will be subject to the usual review procedures.

The Symposium will be held at the Marsham Court Hotel, East Cliff, Bournemouth.

A programme will be arranged for spouses and families as well as a half-day visit to the dual-polarisation radar and tropospheric propagation field station at Chilbolton.

### Contributions

The Programme Organising Committee invites offers of contributions for consideration for the programme. Authors are asked to organise their papers to fall exclusively into one topic area. Each synopsis should be on not more than one side of A4 paper and sent to reach each member of the Committee by 18 January 1982 at the following addresses: Dr. B.L. Barge, Alberta Research Council, 11315-87th Avenue, Edmonton, Alberta, Canada; Prof. R.K. Crane, Thayer School of Engineering, Dartmouth College, Hanover, New Hampshire 03755, USA; Mr. M.P.M. Hall, Rutherford Appleton Laboratory, Chilton, Didcot, Oxfordshire OX11 0QX, UK; Dr. J.P. Mon, CNET, 38-40 rue du Général Leclerc, F-92131 Issy-les-Moulineaux, France. The synopsis should include the main points of the paper and indicate where the emphasis will be placed. Authors of selected synopses will be requested to provide a full camera-ready typescript (of up to 10 pages in A3 format, including an abstract and illustrations) by 7 June 1982, for inclusion in a conference publication to be available on the opening day of the Symposium.

Further details from:

URSI Radar Symposium Secretariat,  
Rutherford Appleton Laboratory,  
Chilton, Didcot, Oxfordshire OX11 0QX,  
United Kingdom.

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## 7TH COLLOQUIUM ON MICROWAVE COMMUNICATION

The 7th Colloquium on Microwave Communication will be held in Budapest, Hungary from 6 to 10 September 1982. It is sponsored by URSI and the Hungarian Academy of Sciences, and organized by the Scientific Society for Telecommunication and the Research Institute for Telecommunication of Hungary. The Conference Chairman is Dr. G. Bogнар, Member of the Hungarian Academy of Sciences. The International Organizing Committee comprises scientists from 19 countries.

The 7th MICROCOLL is the next meeting of an international series on theoretical and practical aspects of communication systems, electromagnetic fields and electronic circuits with the traditional emphasis on microwave communication system and circuit applications, and with the broad coverage of design, manufacturing and testing methodologies for the relevant systems, circuits and components.

The following topics are included in the programme for the 7th MICROCOLL:

1. Trends in communications
2. Communication system theory
3. Circuit theory and computer aided design
4. Electromagnetic theory, antennas and propagation
5. Microwave circuits
6. Materials and devices for microwave applications.

The Proceedings of the 7th MICROCOLL containing full texts of the contributions will be published prior to the meeting and presented to all registered participants.

For further information, apply to:

Secretariat of the 7th MICROCOLL,  
P.O.B. 15,  
H - 1525 Budapest 114,  
Hungary.

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EMC ZURICH 1983 - CALL FOR PAPERS

The 5th Electromagnetic Compatibility Symposium and Technical Exhibition will be held in Zurich from 8 to 10 March 1983. It is sponsored by the Swiss Electrotechnical Association and organized by the Institute for Communication Technology of the Zurich Federal Institute of Technology. Cooperating organizations include the International Union of Radio Science, the IEEE Switzerland Section and the IEEE Electromagnetic Compatibility Society.

As usual, the programme provides for technical sessions and exhibition, workshops, round table discussions, technical excursions and social events. Special accents in 1983 will be on R.F. hazards to biological material (including measuring and evaluation techniques), on compatibility of high power electronics, electromagnetic pulse impact, semi-conductor immunity, computer protection and EMC education. Best papers will receive citations and monetary prizes totalling Swiss Francs 5,000

English abstracts of approximately 500 words (one page) shall be received in ten copies on or before 15 March 1982 by: EMC 1983 Programme Committee, ETH Zentrum-IKT, 8092 Zurich, Switzerland. Tel: (Dr. T. Dvorak) 411/256-2790, Tlx: 53-178 ethbi ch.

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4TH WORLD TELECOMMUNICATION FORUM  
TECHNICAL SYMPOSIUM

Sponsors and Organization

The Forum, organized by the International Telecommunication Union (ITU), is sponsored by national and international professional engineering associations from all five continents.

Forum 83

Following the World Telecommunication Forums held in Geneva, Switzerland, in 1971, 1975 and 1979, the ITU and a great number of professional engineering societies from its 155 Member countries are organizing the 4th World Telecommunication Forum, Part 2, Technical Symposium.

Forum 83, Part 2, will be held in the framework of TELECOM 83, in the new Exhibition and Conference Centre in Geneva from 29 October to 1 November 1983. The quadrennial World Telecommunication Forum, highly technical and scientific yet universal in character, is now recognized as the summit for the interchange of ideas in the ever-changing scene of world telecommunications. It is today's most important international gathering of telecommunication specialists.

Forum Theme "Telecommunications for everyone"

Call for Papers: Part 2 - Technical Symposium

A limited number of contributed papers will be accepted for presentation to the World Telecommunication Forum 1983. These papers must comprise original, unpublished works dealing with subjects included in the technical areas of the sessions listed below.

The scope of the conference is extremely broad and presentations will consequently be limited to overviews on research and development, and the description of new systems and networks. Sessions will be technology- and application-oriented. Papers on detailed theory and specific products will be rejected.

Authors are requested to submit for review 4 copies of a summary of their proposed papers, of approximately 1000 words in length, to the Forum 83 Secretariat at the following address:

Forum 83 Secretariat,  
International Telecommunication Union,  
CH-1211 Geneva 20, Switzerland.

They should concentrate on new applications and indicate the results achieved; they may include one or two diagrams.

Conference languages will be English, French and Spanish. Simultaneous translation will be provided.

Deadlines

Summaries should be received in the Forum 83 Secretariat by 1 November 1982. Authors will be notified whether their summaries have been accepted for presentation by 1 February 1983. The authors of accepted papers will be requested to submit complete manuscripts by 15 June 1983.

Technical Areas

- I. Technology trends and design impact
  - 1. Hardware (micro-electronic devices and equipment; optical electronics; etc.)
  - 2. Software and software aids ( systems software; software aid for management planning)
- II. Telecommunication networks evolution
  - 1. Development, management, administration and maintenance of networks
  - 2. Competitive networks (value added; interconnected; CATV; terminal versus network; privacy of information)
  - 3. Integrated Services Digital Networks (ISDN)
- III. Telecommunication services today and tomorrow
  - 1. Existing and future interactive services
  - 2. Broadcast and other distributive services
- IV. User terminal equipment
  - 1. Telephone, data and telematic (facsimile, videotex, teletex, etc. including wideband)
  - 2. Human factors and users' needs
  - 3. Specialized equipment for the handicapped, conferencing (wideband), etc.
- V. Terrestrial and space telecommunication systems
  - 1. Transmission
  - 2. Switching and signalling
  - 3. Mobile systems (land, maritime, aeronautical)
  - 4. Signal processing
- VI. Telecommunications in developing areas
  - 1. Rural telecommunications
  - 2. Technology transfer
  - 3. Training and education
- VII. Radio-frequency spectrum and management.

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PROCEEDINGS OF THE SPANISH URSI SYMPOSIUM

The Spanish URSI Committee organized a National Symposium in Madrid on 7-8 October 1980. The Proceedings of this meeting, which cover the activities of most URSI Commissions, have just been published (in Spanish). Information can be obtained from

Prof. M. Rodriguez Vidal,  
President, Spanish URSI Committee,  
Facultad de Ciencias Fisicas,  
Universidad Complutense,  
Madrid 3, Spain.

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SPECTRUM MANAGEMENT

Over the past few decades, radio scientists and communication engineers have been brought face to face with the fact that the radio frequency spectrum must be regarded as falling into the category of "scarce commodities". Practical considerations determine the upper and lower frequency limits of the part of the spectrum that can be used for radio communications and for the many other services recognised by the International Telecommunication Union (ITU), and yet the demand for new and extended allocations continues to increase.

Hence it is not surprising that "spectrum management" plays an increasingly important rôle in the development and operation of systems of communication, and it is inevitable that international coordination of frequency allocations must be accepted if chaos is to be avoided.

The recent World Administrative Radio Conference (WARC) held in Geneva in 1979 was the occasion for a comprehensive review of the situation regarding frequency allocations and other matters, and important decisions were made which will affect the planning of communication systems during the remainder of the 20th century at least.

In this connection, it is worth noting that the IEEE has recently published a special issue of its Transactions (IEEE Trans. EMC-23, 165-333(1981)) which reviews, in some detail, the decisions taken during WARC 1979. The four

Guest Editors (D. Bodson, R.G. Gould, G.H. Hagn and W.F. Utlaut), besides signing the Editorial on "Spectrum Management and the 1979 WARC", have collected 26 invited papers, grouped under the headings a) Conference Perspectives, b) General Summary: Conference Results, c) Radio Services: Results and Issues, d) Future Conferences.

The papers cover not only the traditional radio services, but deal also with such areas as radioastronomy, radar, and the use of satellites in geostationary orbits.

This publication provides a very valuable survey of the important decisions made by WARC 1979 and their probable consequences. It will be especially useful to those who do not need to consult the original ITU publications but who, nevertheless, wish to acquire some understanding of the present situation and the problems of spectrum management in the 20th century.

Copies of Post-WARC-79 IEEE Transactions Joint Special Issue are available for \$10 U.S. (\$5, first copy only, for IEEE members) from:

IEEE Service Center,  
445 Hoes Lane,  
Piscataway, NJ 08854,  
USA.

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INTERNATIONAL GEOPHYSICAL CALENDAR 1982

The Operational Edition of the Calendar (see following pages) has been issued by the International Ursigram and World Days Service (IUWDS) and copies are available on request from:

Dr. P. Simon,  
IUWDS Chairman,  
Ursigrammes Observatoire,  
F - 92190 Meudon,  
France,

or

Miss H.E. Coffey,  
IUWDS Acting Secretary for World Days  
WDC-A for Solar-Terrestrial Physics,  
NOAA,  
325 Broadway,  
Boulder, Colorado 80303,  
USA.

On the back of the Calendar, there is a summary (not reproduced here) of the recommended observational programmes in various branches of atmospheric physics and in studies of certain interplanetary phenomena.

# International Geophysical Calendar for 1982

(See other side for information on use of this Calendar)

	S	M	T	W	T	F	S		S	M	T	W	T	F	S	
						1	2		27	28	29	30	1	2	3	
	[3	[4	5	6	7	8	9		4	5	6	7	8	9	10	
JANUARY	10	11	12	13	14	15	16		11	12	13	14	15	16	17	JULY
	17	18	19	20	21	22	23		18	19	20	21	22	23	24	
	24	25	26	27	28	29	30		25	26	27	28	29	30	31	
	31	1	2	3	4	5	6		1	2	3	4	5	6	7	
	7	8	9	10	11	12	13		8	9	10	11	12	13	14	
FEBRUARY	14	15	16	17	18	19	20		15	16	17	18	19	20	21	AUGUST
	21	22	23	24	25	26	27		22	23	24	25	26	27	28	
	28	1	2	3	4	5	6		29	30	31	1	2	3	4	
	7	8	9	10	11	12	13		5	6	7	8	9	10	11	
MARCH	14	15	16	17	18	19	20		12	13	14	15	16	17	18	SEPTEMBER
	21	22	23	24	25	26	27		19	20	21	22	23	24	25	
	28	29	30	31	1	2	3		26	27	28	29	30	1	2	
	4	5	6	7	8	9	10		3	4	5	6	7	8	9	
APRIL	11	12	13	14	15	16	17		10	11	12	13	14	15	16	OCTOBER
	18	19	20	21	22	23	24		17	18	19	20	21	22	23	
	25	26	27	28	29	30	1		24	25	26	27	28	29	30	
	2	3	4	5	6	7	8		31	1	2	3	4	5	6	
MAY	9	10	11	12	13	14	15		7	8	9	10	11	12	13	
	16	17	18	19	20	21	22		14	15	16	17	18	19	20	NOVEMBER
	23	24	25	26	27	28	29		21	22	23	24	25	26	27	

JUNE	13	14	(15)	(16)*	(17)*	18	19
	20	(21)	22	(23)	(24)	25	26
	27	28	29	30	1	2	3
	S	M	T	W	T	F	S

- (13) Regular World Day (RWD)
- (14) Priority Regular World Day (PRWD)
- (18) Quarterly World Day (QWD)  
also a PRWD and RWD
- 2 Regular Geophysical Day (RGD)
- 9 10 World Geophysical Interval (WGI)
- [3] Day with unusual meteor shower activity,  
Northern Hemisphere
- 5] Day with unusual meteor shower activity,  
Southern Hemisphere

12	[13]	(14)	(15)*	(16)*	17	18
19	20	21	(22)	23	24	25
26	27	28	29	30	31	1
2	[3	[4	5	6	7	8
9	10	(11)	(12)	(13)	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					
S	M	T	W	T	F	S

- (25) Day of Solar Eclipse
- [14 15] Airglow and Aurora Period
- 20\* Dark Moon Geophysical Day (DMGD)
- 20\* Incoherent Scotter Coordinated  
Observation Day and Coordinated  
Tidal Observation Day

DECEMBER

1983  
JANUARY

**NOTES:**

1. An Alpine Experiment (ALPEX), of the WMO/ICSU World Climate Research Program, continues from 1 January 1982 through 30 September 1982.
2. Post-SMY STIP INTERVAL XIII (started 1 December 1981) runs through 31 January 1982; and STIP INTERVAL XIV is 20 May through 20 July 1982.
3. Middle Atmosphere Program (MAP) begins 1 January 1982 and runs through 1985.

LIST OF FUTURE SYMPOSIA AND MEETINGS

I. Meetings sponsored or co-sponsored by URSI

International Symposium on Solar-Terrestrial Physics,  
17-22 May 1982, Ottawa, Canada.

Contact address: COSPAR Secretariat,  
51 boulevard de Montmorency,  
F - 75016 Paris, France.

Symposium on Remote Sensing and Mineral Exploration,  
17-22 May 1982, Ottawa, Canada.

Contact address: COSPAR Secretariat,  
51 boulevard de Montmorency,  
F - 75016 Paris, France.

Symposium on Giant Planets and their Satellites,  
18-21 May 1982, Ottawa, Canada.

Contact address: COSPAR Secretariat,  
51 boulevard de Montmorency,  
F - 75016 Paris, France.

Workshop on Advances in Instrumentation and Data  
Display related to Space Plasmas, 27-28 May, 1982,  
Ottawa, Canada.

Contact address: COSPAR Secretariat,  
51 boulevard de Montmorency,  
F - 75016 Paris, France.

International Conference on Plasma Physics, 9-15 June  
1982, Göteborg, Sweden.

Contact address: Conference Secretariat,  
Swedish Trade Fair Foundation,  
P.O.B. 522,  
S - 402 24 Göteborg, Sweden.

International Symposium on Information Theory,  
21-25 June 1982, Les Arcs, France.

Contact address: Prof. B. Picinbono,  
Laboratoire des Signaux et Systèmes,  
Ecole supérieure d'Electricité,  
Plateau du Moulon,  
F - 91190 Gif-sur-Yvette, France, or

Prof. C.W. Helstrom,  
Department of Electrical Engineering  
and Computer Sciences,  
University of California San Diego,  
La Jolla, CA 92093,  
USA.

6th International Wroclaw Symposium on Electromagnetic  
Compatibility, 22-24 June 1982, Wroclaw, Poland.

Contact address: EMC Symposium,  
Box 2141,  
51-645 Wroclaw 12,  
Poland.

Conference on Precise Electromagnetic Measurements  
(CPEM), 28 June - 1 July 1982, Boulder, Colorado, USA.

Contact address: Dr. D.W. Allen,  
National Bureau of Standards,  
325 Broadway,  
Boulder, Colorado 80303,  
USA.

7th Summer Symposium on Circuit Theory, 12-16 July  
1982, Prague, Czechoslovakia.

Contact address: Dr. L. Kratena,  
Institute of Radioengineering and  
Electronics,  
Czechoslovak Academy of Sciences,  
Lumumbova 1,  
Praha 8 - Kobylysy,  
Czechoslovakia.

Radio Probing of the High Latitude Ionosphere and  
Atmosphere: New Techniques and New Results, 9-13 August  
1982, Fairbanks, Alaska, USA.

Contact address: Prof. R. Hunsucker,  
Geophysics Institute,  
University of Alaska,  
Fairbanks, Alaska,  
USA.

Symposium on Multiple-Parameter-Radar Measurements of Precipitation, 23-27 August 1982, Bournemouth, UK.

Contact address: URSI Radar Symposium Secretariat  
Rutherford Appleton Laboratory,  
Chilton, Didcot, Oxon,  
United Kingdom.

7th Colloquium on Microwave Communication, 6-10 September 1982, Budapest, Hungary.

Contact address: Secretariat of 7th MICROCOLL,  
P.O.B. 15,  
H - 1525 Budapest 114,  
Hungary.

12th European Microwave Conference, 13-17 September 1982, Helsinki, Finland.

Contact address: Dr. A. Räsänen,  
Conference Secretary,  
Helsinki University of Technology,  
Radio Laboratory,  
Otakaari 5A,  
SF - 02150 Espoo 15, Finland.

8th European Conference on Optical Communication, 21-24 September 1982, Cannes, France.

Contact address: Secrétaire général ECOC 1982,  
11 rue Hamelin,  
F - 75783 Paris Cedex 16, France.

Electromagnetic Compatibility Society Symposium, September 1982, San Francisco, USA.

Contact address: not available.

Beacon Satellite Studies of the Earth's Environment, 7-11 February 1983, New Delhi, India.

Contact address: Dr. Tuhi Ram Tyagi,  
Radio Science Division,  
National Physical Laboratory,  
Hillside Road,  
New Delhi 110012, India

or

Dr. R. Leitinger,  
Institut für Meteorologie und  
Geophysik,  
Karl-Franzens-University Graz,  
Halbärthgasse 1,  
A - 8010 Graz, Austria.

5th Symposium on Electromagnetic Compatibility and  
Technical Exhibition, 8-10 March 1983, Zurich,  
Switzerland.

Contact address: EMC 1983 Programme Committee,  
ETH Zentrum-IKT,  
CH - 8092 Zurich, Switzerland.

4th International Conference on Integrated Optics and  
Optical Fiber Communication (IOOC' 83), 27-30 June  
1983, Tokyo, Japan.

Contact address: Prof. H. Inaba,  
Tohoku University,  
Research Institute of Electrical  
Communication,  
2-1-1 Katahira, Sendai-shi,  
980 Japan.

URSI Symposium on Electromagnetic Theory, 22-26 August  
1983 (provisional dates), Santiago de Compostella,  
Spain.

Contact address: Prof. D.M. Rodriguez Vidal,  
Facultad de Ciencias Fisicas,  
Universidad Complutense,  
Madrid 3, Spain.

4th World Telecommunication Forum, Part 2 - Technical  
Symposium, 29 October - 1 November 1983, Geneva,  
Switzerland.

Contact address: FORUM 83 Secretariat,  
International Telecommunication Union,  
CH-1211 Geneva 20, Switzerland.

XVIth International Conference on Phenomena in Ionized  
Gases (ICPIG(XVI)), 29 August - 3 September 1983,  
Düsseldorf, FR of Germany.

Contact address: Prof. K. Suchy,  
Institut für Theoretische Physik II,  
Universitätsstrasse 1,  
D - 4000 Düsseldorf 1,  
Federal Republic of Germany.

Electromagnetic Compatibility Society Symposium,  
October 1983, Washington, D.C., USA.

Contact address: not available.

## II. Other Meetings of Interest to URSI

COSPAR 24th Plenary Meeting and Associated Activities,  
17 May - 2 June 1982, Ottawa, Canada.

Contact address: Mr. Z. Niemirowicz,  
Executive Secretary, COSPAR,  
51 boulevard de Montmorency,  
F - 75016 Paris, France.

National Radio Science, IEEE Antennas and Propagation  
Society, and Nuclear Electromagnetic Pulse Meetings,  
24-28 May 1982, Albuquerque, New Mexico, USA.

Contact address: Dr. C.E. Baum,  
AFWL, Kirtland Air Force Base,  
Albuquerque, New Mexico 87117,  
USA.

17th Meeting of SCAR, 28 June - 9 July 1982, Leningrad,  
USSR.

Contact address: Mr. G.E. Hemmen,  
Scott Polar Research Institute,  
Lensfield Road,  
Cambridge CB2 1ER,  
United Kingdom.

XVIIIth General Assembly of IAU, 17-26 August 1982,  
Patras, Greece.

Contact address: IAU Secretariat,  
61 avenue de l'Observatoire,  
F - 75014 Paris, France.

National Radio Science and IEEE Antennas and Propaga-  
tion Society Meetings, 25-28 May 1983, Houston, Texas,  
USA.



Contact address: Prof. S.A. Long,  
University of Houston,  
Houston, Texas,  
USA.

XVIIIth General Assembly of IUGG, 15-27 August 1983,  
Hamburg, FR Germany.

Contact address: Prof. P. Melchior,  
Secretary General, IUGG,  
Observatoire Royal de Belgique,  
3 avenue Circulaire,  
B-1180 brussels, Belgium.

National Radio Science and IEEE Antennas and Propaga-  
tion Society Meetings, 17-22 June 1984, Boston, Mass.,  
USA.

Contact address: Dr. A.C. Schell,  
Hanscom Air Force Base,  
Bedford, MA 01730,  
USA.

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NAMES AND ADDRESSES

URSI OFFICERS AND OFFICERS OF MEMBER COMMITTEES

Note: An alphabetical index of names, with addresses and page references, is reproduced at the back of this Bulletin.

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x  
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Germany, F.R.: Dr.-Ing. R. Kersten  
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Commission D - Electronic and Optical  
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USA: Dr. K.J. Button

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Commission F - Remote Sensing and Wave Propagation -  
Neutral Atmosphere, Oceans, Land, Ice

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Czechoslovakia: Dr. J. Prokop

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