Advances in Solar Physics

The Solar Physics Section of EPS held its triennial meeting *Advances in Solar Physics* this year in Catania, from 11-15 May. The meeting was attended by 140 participants, including over 20 from eastern Europe and several from the United States. The meeting comprised seven scientific sessions and was opened by an outstanding talk titled "The Sun Today" by J.-C. Pecker of the Collège de France, Paris.

The meeting aimed to bring together solar physicists studying on one hand the solar interior, and on the other hand the solar atmosphere. In order to link our understanding of fundamental processes such as convection and magnetic field generation to that of energy release and transport in the sun's outer layers (*i.e.*, radiation, mass motion, heating, and particle acceleration), it is of crucial importance that these two communities combine their efforts. Comparisons of reconnection and acceleration processes between laboratory and natural plasmas appear to be a promising approach for the future.

The meeting's first session dealt with the problem of the lack of neutrinos in the frame of the new instruments in Italy (notably those at the Gran Sasso laboratory) and in the former eastern block. The conversion of neutrinos into particles with different mass may be a possible solution.

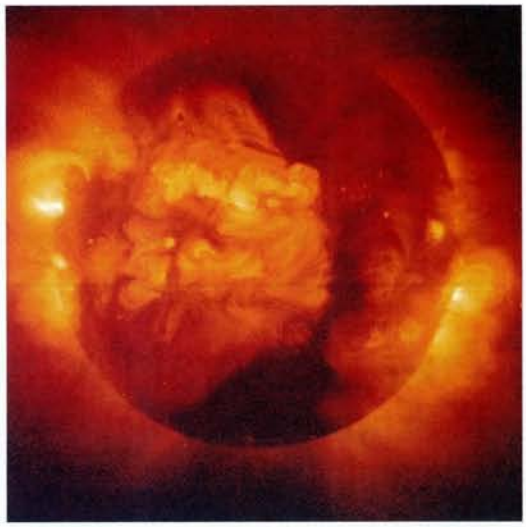
The different zones inside the sun have been addressed specifically with respect to their rotation rates, and this may be important for explaining the duration of the solar cycle. The dynamo effect certainly operates at the base of the convective zone (CZ) in a sheared region located between the solar core with its rigid rotation and the overlying CZ, with its differential rotation. Recent imaging observations of the corona in the radio domain with the Nancay radio heliograph, and in the soft-X-ray domain with the Japanese satellite YOHKOH, have emphasized the dynamic behavior of the large, evolving loops. Their constant evolution is presumably due to convective motions at foot-prints. The heating is connected with the magnetic field: Alfvén waves or reconnection of magnetic field lines.

Two sessions were devoted to the flare physics. These phenomena represent a large release of energy — up to 10^{32} ergs. Using high temporal and spatial resolutions we can detect a succession of bursts and kernels which seem to indicate that some fragmentation of the energy release is occurring over very short time scales. This was shown using the radio-heliograph of Nancay and the new gamma-ray detector aboard the Russian satellite GRANAT.

The acceleration of particles is still a controversial topic. Are the particles accelerated slowly before the flare, trapped in the corona, and then suddenly dumped into the photosphere; or are they all accelerated impulsively at the impulsive phase of the flare; or are some accelerated by post-flare shocks as they move through the corona?

The last session was concerned with instrumentation: ground-based instruments (in the Canary Islands and at Pic du Midi) and space instruments (the future ESA-NASA satellite SOHO). During the last decade, improvements have been made in spatial resolution for intensity and velocity measurements. The French-Italian telescope THEMIS will provide in 1996 magnetic field vector measurements with a spatial resolution four times better than those now available.

The database generated from new ground-based and space instruments available to the European solar community was discussed



An image of the sun taken in the soft X-ray region from the YOHKOH spacecraft. It shows highly ionized plasma emitting at wavelengths between 2 and 20 Å. Small flares can be seen on the east and west limbs (right and left, respectively), and an extensive loop structure associated with an active region is seen just above the centre. The coronal hole that stretches from the north to south poles persisted for several months.

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during a roundtable, and an excellent summary of the conference was presented by C. Jordan from Oxford.

The main conclusion of this fruitful meeting is that the distinction between the quiet and active atmosphere has now largely disappeared since it seems that the large-scale active phenomena (*e.g.*, flares) are composed of small-scale processes which may explain the behaviour of the quiet sun (*e.g.*, the heating of the corona by microflares).

B.Schmieder
Secretary, Solar Physics Section

G.M. Simnett
Chairman, Solar Physics Section

Post-Doctoral Position
in Experimental Fluid Dynamics.

A post-doc position is open at the Optics and Fluid Dynamics Department at Risø National Laboratory. The appointment is for up to two years.

In the Continuum Physics Section one of our main topics is investigations of coherent vortical structures in two-dimensional flows in neutral fluids as well as in plasmas. The studies are a combination of theoretical, numerical and experimental investigations. The experimental studies are performed in a rotating water tank and in stratified fluids. In addition we are at present building a tank with a parabolic bottom to investigate vortical structures in rotating flows with a strong radial variation of the Coriolis force.

The successful applicant should participate in the experimental studies of vortical structures and also take part in the development of new diagnostics for measuring flow fields. One aim of the investigations is to understand the self-organization processes underlying the formation of two-dimensional coherent structures under different conditions.

We are seeking an innovative experimentalist having a Ph.D. degree in fluid dynamics. Preference will be given to candidates with experience in flow field diagnostics and knowledge of non- linear dynamics.

Terms of employment: Similar to Danish staff at Risø National Laboratory.

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Further information: Jens Juul Rasmussen, Phone, direct line: +45 4677 4537, Fax +45 46 754064, e-mail: JUUL@RISOE.DK

Application including C.V. and full personal data should be addressed to the Personnel Department, Risø National Laboratory, P.O. Box 49, DK-4000 Roskilde, Denmark.

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Department of Technical Physics

Professorship in Theoretical Solid State Physics

(reference number 2493/93/159)

The Department of Technical Physics invites candidates for the chair which will be vacant soon.

The department The research in the department is organized around three themes: Optics, Physics of Fluids and Material Science.

Material Science This group has three full-time chairs: Low Temperature Physics, Solid State Physics and Theoretical Solid State Physics. In addition there are part-time chairs in Industrial Superconductivity and in Applied Solid State Physics. The present research of the Physics of Materials group concentrates on: High T_c superconducting layers, nanoscale structures with quantum size effects, surface physica, semiconductor/metal interfaces and spectroscopy.

The group participates in the Research Institute "Center for Materials Research".

The chair The research of the Theoretical Solid State team is expected to focus on theoretical aspects of thin layers and surfaces. Candidates for the chair should have a wide experience in Solid State Physics, in particular in these two topics and be used to cooperate with experimentalists. Familiarity with the calculation of electronic and transport properties is required.
The professor is expected to guide his team of staff and students in initiating and executing research programs. This requires managing skill and experience.

The theory group participates substantially in the teaching activities of the department. Part of this teaching is the professors task requiring him to have didactic skills.

Salary will depend on experience and present position.

Additional information can be obtained from the chairman or the secretary of the nominating committee, prof. A. van Silfhout, telephone (+31) 53 893146, fax (+31) 53 332371 and prof. D. Feil, telephone (+31) 53 892949, E-mail: feil@utwente.nl, respectively.

Letters of application, quoting reference number and including curriculum vitae, list of publications etc., should be sent within six weeks after publication of this advertisement to the Director of the Department of Technical Physics, Drs. E.W. ten Napel, P.O. Box 217, 7500 AE Enschede, The Netherlands.

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