RUTHERFORD Bulletin 21

20 November - 4 December 1978

# First Beam for TASSO

*On 15 July the first stored beam was observed in the new 19 GeV electron-positron storage ring PETRA at the DESY Laboratory in Hamburg. This is an outstanding achievement since the machine has been completed 9 months ahead of schedule and within the costs fixed in 1974. This success provides an exciting challenge to the experimenters who have also advanced the preparation of their equipment to produce early physics results at the world's highest energy electron-positron facility. We here bring you the latest news from Germany of the TASSO collaboration team, which has just rolled its equipment into an intersection region ready for its first run with the colliding beams.*

The Two-Arm Spectrometer Solenoid (TASSO) detector is being built by an international team which includes groups from Germany, Israel, USA and the UK. The UK physicists are from Imperial College London, Oxford University and the Rutherford Laboratory. The detector is to be used to study the various particles produced when high energy positrons and electrons *collide head-on*. In particular they will measure the production of hadrons and muons, look for new particles and narrow resonances.

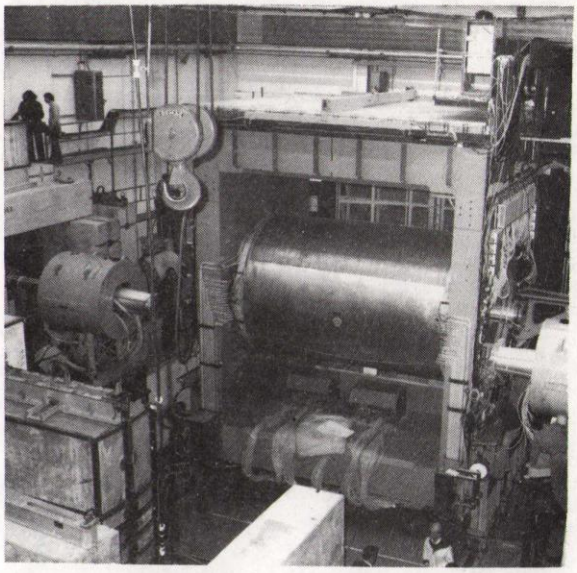
The heart of the TASSO detector is an 0.5 tesla solenoidal magnet, 4.5m long and 2.9m in diameter. The photographs indicate the enormous scale of the equipment. Inside the solenoid are time-of-flight counters, a 3m diameter cylindrical drift chamber and an inner cylindrical proportional chamber (built at the Rutherford Laboratory). The drift and proportional chambers have been successfully tested *in situ* with cosmic rays and have had their first taste of beam. Above and below the iron yoke of the magnet are arrays of single-wire proportional tubes, built at Oxford University, for detecting muons.

Several major items remain to be added in the coming months. The two *hadron arms*, a series of detectors stretching out across the hall on either side of the magnet, will take shape - including time-of-flight counters and shower counters provided by the UK. A large liquid-argon shower counter system for electron and photon detection will fill the empty spaces inside the magnet.

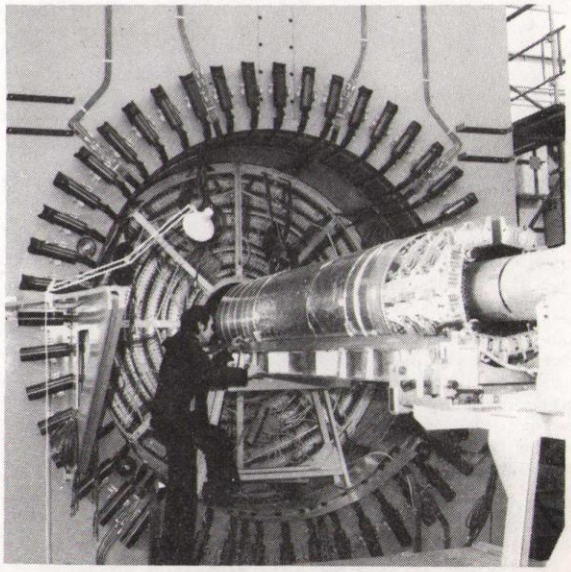
The early machine runs on PETRA have been most encouraging: beams of up to 11.1 GeV have been stored without serious losses and with good energy resolution. A second international collaboration with UK participation at PETRA is the JADE group. This team is scheduled to install in an intersection region for beam early next year, and we promise to bring you details of their progress in a future issue. We wish the TASSO and JADE collaborations every success in their forthcoming runs and look forward to highlighting their new physics results in the near future.

*On 17 October the TASSO detector was moved into position. There was great rejoicing as the first single beam was delivered, producing clear particle tracks through the cylindrical proportional chamber and muon tubes. The group continues to checkout the equipment on single beam and cosmic rays, and is eagerly awaiting their first electron-positron collisions.*

*(We thank Drs David Saxon and Phil Woodworth for their letters and phone-calls from DESY).*



*View of the 0.5 tesla solenoidal magnet of the TASSO detector which is now installed in the colliding beam region of the PETRA machine in Hamburg (DESY Laboratory photo).*



*Dr Gareth Jones of Imperial College London checks the cylindrical proportional chamber as it is being installed inside the drift chamber assembly (DESY Laboratory photo).*

# INTERNAL EVENTS

NIMROD LECTURE SERIES

**Monday 27 November**
**1130 hrs**
**Lecture Theatre**

**Testing QCD**

*Dr E Reya/DESY*

**Monday 4 December**
**1130 hrs**
**Lecture Theatre**

**Hadron Production in 220 GeV μ-p collisions at FNAL.**

*Dr J Proudfort/Oxford*

HEP SEMINARS

**Wednesday 22 November**
**1100 hrs**
**R61 Conference Room**

**The Spectrum of Baryonia**

*M Fukugita/R.L.*

**Wednesday 6 December**
**1100 hrs**
**R61 Conference Room**

**Calorimeter Triggers for Large $p_T$ Events.**

*Professor J C Polkinghorne/Cambridge.*

**Wednesday 29 November**
**1100 hrs**
**R61 Conference Room**

**$\bar{\nu}$ Neutral Current Interactions at the Fermi Laboratory 15ft Chamber in an 81% Neon/Hydrogen Mixture.**
*W C Louis/R.L.*

SAFETY FILM SHOW

**Thursday 23 November**
**1230 hrs, 1315 hrs & 1400 hrs.**
**Lecture Theatre**

**Safety - Everyone's Business**

*A foreman's momentary lapse causes an accident in which an operator loses his hand - and a well paid job. The film highlights the inherent dangers to be found in every workshop and shows how the Health and Safety at Work Act affects every business concern, large or small.*

MUON SPIN ROTATION AT SNS

**Friday 24 November**
**0900 hrs - 1545 hrs**
**Saturday 25 November**
**0915 hrs - 1700 hrs**
**Lecture Theatre**

*There will be a two day Series of Lectures and Discussions to assess the interest in and the possibility of providing a Muon Spin Rotation Facility at the SNS.*

RUTHERFORD LABORATORY LECTURE

**Thursday 23 November**
**1515 hrs**
**Lecture Theatre**

**All Change in the Oceans**

*Professor BM Funnell/University of East Anglia.*

*In the last 10 years the Deep-Sea Drilling Project has confirmed the hypothesis that ocean basins grow by ocean floor spreading, and we can now make detailed reconstructions of the changing shape, size and positions of the oceans for the last 160 million years. Latterly it has become apparent that major global changes in oceanic chemistry and circulation have also taken place during that time.*

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# SITE EMERGENCY

Harwell has announced that the next Site Emergency Exercise will be held on 23 November. It will involve the whole site including the peripheral establishments.

The responsibilities of the site emergency organisation include (1) mustering arrangements for specialised services, (2) the provision of a communications system (the cascade system), and (3) the arrangements for overall control of the site (including the Rutherford Laboratory, MRC and NRPB). The arrangements come into effect in the event of a potential or actual release of radioactive or toxic material beyond the building of origin.

The sounding of the Klaxons (an interrupted note) is used to give the warning that an incident (or exercise) has occurred and implies the following:

(1) Building plans for site emergency are put into effect.
(2) Building wardens will carry out their duties (see HSNs 35 and 36 for further details).
(3) All people in the open, including contractor's employees, must take shelter in the nearest substantial building.

The sounding of the All Clear on the Klaxons (a continuous note) signifies the end of the emergency (or exercise) for all staff not involved in specialist operations.

The following points should be noted:

(1) The gates are closed when the site warning is sounded, but special arrangements will be made to convey authorised visitors to their destinations.
(2) The site telephone system must not be used during the time the site is under cover except for purposes connected with the exercise or in case of emergency.
(3) Umpires will be moving about the site during the exercise to check the response of specialist services and staff in general.

Staff are asked to co-operate fully in this important matter; however, it is not expected that the exercise will interfere with attendance at the Rutherford Laboratory lecture.

# EXTERNAL EVENTS

THEO.PHYS.SEMINARS/CONF.RM. 8.9 AERE - 1400 hrs

21 Nov: Dr R A McKee/Oak Ridge N.L. - Defect Kinetics and Metal Oxidation.
28 Nov: Dr I P Castro/Surrey U. - Everyday Turbulence: It's Relevance and Inscrutability.
5 Dec: Dr W C Mackrodt/ICI - The Calculation of Point Defects in Alkaline - Earth Oxides

PHYS + GEOPHYS COLLOQUIA/G.12 FORT ROYAL BRISTOL U - 1700 hrs

27 Nov: Prof. Sir Rudolf Peierls FRS/Oxford U. - The Momentum of Light in a Refractive Medium.
4 Dec: Prof. I M Ward/Leeds U - The Fracture Behaviour of Glassy Polymers.

HEP SEMINARS/DAMTP CAMBRIDGE - 1500 hrs

24 Nov: P Suranyi/I C - Cross Sections and Classical Solutions of Field Equations.
1 Dec: D H Perkins/Oxford U. - Confrontation of QCD with Experiment.

THEO.PHYS SEMINARS/SCHUSTER LAB.MANCHESTER - 1430 hrs

22 Nov: Prof H E Hall/Manchester U - Superflow Collapse in $^3$He-A.
29 Nov: Prof. Sir Sam Edwards/Cambridge - Theory of Amorphous Materials.

ELEM.PART.PHYS.SEMINAR/L.TH. N.P.D. OXFORD - 1430 hrs.

23 Nov: Prof C Ward/Macquarie U. Sydney - A Theory of Leptons.
30 Nov: Dr J Dainton/Glasgow - Recent Results in Meson Photoproduction.

HEP SEMINARS/MANCHESTER - 1415 hrs

21 Nov: R Chashmore/Oxford. - Mesons - Old and New.

SCHUSTER COLLOQUIA/BRAGG L.TH. MANCHESTER U. - 1615 hrs

6 Dec: Dr A F Gibson/R.L - High Power Pulsed Lasers for Plasma Compression and (Hopefully) Fusion.

THEO.PHYS SEMINARS/QMC - 1615 hrs.

27 Nov: Prof L Castillejo/UCL - Classification of Yang-Mills Fields at a Point.
4 Dec: Prof R London/Essex U. - Light Scattering by Surface Ripples on Solids and Liquids.

THEO & HEP SEMINARS/SOUTHAMPTON U. - 1430 hrs

24 Nov: Prof B G Wybourne/Sussex and Canterbury - Aspects of the Exceptional Groups in Theoretical Physics.
1 Dec: Dr J Dainton/Glasgow - Recent Results on Photon-induced Meson Specroscopy.

ELEM.PART.PHYS.SEMINARS/QUEENS BUILDING, WESTFIELD COLL - 1400 hrs.

22 Nov: Dr C H Llewellyn-Smith/Oxford - QCD Predictions for Processes Involving Real Photons.
29 Nov: Dr M B Green/QMC - The Quantum Mechanics of Lattice Gauge Theory.
6 Dec: Dr G Shaw/Manchester - Shadowing: Vector Mesons and Partons.

PHYS.COLLOQUIA/CLARENDON LAB OXFORD - 1615 hrs.

24 Nov: Dr A Gibson/Culham Lab. - "The J.E.T. Project".
1 Dec: Prof G zu Putlitz/Heidelberg - Simple Muonic Atoms.

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FILM NOTICE

It is Period 12. Colour strip YELLOW for beta-gamma films. Please make sure all old dosimeters are returned. Next Film Issue Monday 4th December.

## Muon Spin Rotation at the SNS

The Spallation Neutron Source which is currently being built at the Rutherford Laboratory has been designed for thermal neutron scattering research. Attention is now being given to the possibility of exploiting the SNS in some other areas. One of these is muon spin notation.

This is a rapidly developing technique which is already finding applications in the study of magnetic materials, insulators, semi-conductors, diffusion and trapping of hydrogen-like interstitials, liquids, polymers, chemistry and reaction kinetics. The method is based on the ability to follow the precession of polarized muons in condensed matter, the evolution of the spin polarization depending on the interaction of the muon magnetic moment with local fields of a magnetic environment or with externally applied fields. Of particular importance for chemical systems is the formation of muonium which can simulate hydrogen atoms.

In order to assess the interst for incorporating a muon spin rotation facility at the SNS, a two day meeting is being held in the Lecture Theatre at the Rutherford Laboratory on 24 and 25 November 1978. A member of invited speakers will give reviews of muon spin rotation applications in their areas on condensed matter research, and it is hoped that a broad range of scientists who could find the technique valuable in their areas of research will attend. Further details are available from C J Batty Building R12 Ext 426.

TRADE EXHIBITIONS

Nuclear Enterprises Ltd are mounting a demonstration of Multichannel Analysers and Analogue to Digital Converters at the Rutherford Laboratory, building R20, Conference Room 5 from 1000 - 1600 hrs on 27 and 28 November.

Wallis Electronics Ltd are exhibiting High Voltage Power Supplies at the Rutherford Laboratory in R12 Conference Room from 1000-1600 hrs on 29 November.

The Tektronix Mobile Demonstration Vehicle will be parked in the Cockcroft Hall car park, Harwell, from 1000 hrs to 1600 hrs on Tuesday 28 November. On show will be Oscilloscopes, Spectrum Analysers, Logic Analysers, and general test and measurements equipment.

OVERSEAS VISITS

Mrs J A Blisset and Mr B T Payne to DESY 19 - 24 Nov: to work on TASSO experiment.

Dr P H Sharp to CERN 20 - 23 Nov; to work on Prop 202.

Messrs K G Miles, L Phillips & K Stanley to DESY 20 Nov - 1 Dec: for installation work on JADE and TASSO experiments.

Mr K A Freeston to DESY 21 - 24 Nov: for installation of beam line equipment on JADE and TASSO experiments.

Mr J R M Maidment to ROME 22 - 25 Nov: for ECFA-LEP working group meeting.

Drs M W Johnson and W G Williams to MUNICH 22 - 24 Nov: to discuss and examine neutron guide facilities at Garching.

Dr J B Forsyth to ILL Grenoble 24 Nov - 10 Dec: to carry out various experiments.

Mr P G Davey, Dr D R S Boyd and Mr M J Newman to Brussels 26 - 29 Nov: to attend Computer aided design symposium.

Dr G E Kalmus to CERN 27 - 29 Nov: to attend BUG and SPSC meetings.

## Meet Margaret

Recent publicity has already informed the Laboratory staff that the Catering Contract has changed. The Bateman Catering Organization took over the contract on 30 October 1978 and brought with them Miss Margaret Howson as the Manageress.

Miss Howson was trained in Hotel Keeping, Catering and Restaurant Management at Highbury Technical College, Portsmouth. She then joined Batemans three years ago and became the Restaurant Manageress at the Elizabeth Arden Cosmetic Factory and Offices in Acton.

Margaret is very happy to be working at the Rutherford Laboratory and regards her work here as a challenge. She will endeavour to make some changes and improvements in the service and try to experiment with different dishes and exciting menus.

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### New Job for Old P.C.

Old Colleagues of Ted Higgins will be interested, though not surprised, to hear that he is once more in harness as Clerk to a Parish Council. This time it is Grange-over-Sands P.C. that he will be serving.

Obviously improving his new home in Ayside has not involved all his energy, so the expertise acquired and put to effect in our neck of the woods, will now be of benefit to his new stamping ground. Good Luck to them both.

B-SLIM CLUB. We have now been in existence for just one month and what tremendous success we have had. With an average attendance of 17 ladies and 1 gentleman, our slimmers have lost the vast total of 146lbs - has anyone seen it lying around?
So if you have any unwanted pounds to shed why not join us on Thursdays between 1200 hrs and 1330 hrs in the NBRU Conference Room. R20.

RUTHERFORD LABORATORY STAFF TOURS A series of Tours on various aspects of the work of the Rutherford Laboratory has been initiated and a pilot programme for introducing junior and industrial staff to the work being done at the computing facilities in R26/27, is now under-way.

If this visit proves popular further tours, of the High Energy Physics Scanning Laboratories, Electron Beam Lithography Facility and the Windmill and associated energy projects, will be arranged.

Visits will be arranged through Divisions, and if the tour of the computing facility is a typical example the exercise should prove an important and worthy addition to the facilities for introducing the Laboratory to the Laboratory - not to mention providing a fascinating and stimulating experience for those who attend.

LUNCHTIME FILMS AND MUSIC The Programmes are open to all who wish to attend and take place on Wednesdays, starting at 1230 hrs in the Lecture Theatre.

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| Wed: | Nov: 22 (Films) | "The George Saxton Engine Magnet Mill". |
| | | "How to win Holes by Influencing People". |
| Wed: | Nov. 29 | John Williams - Guitar Music |

CHRISTIAN FELLOWSHIP The meeting on Friday 24th November will be in the form of an open, sharing meeting, when those attending will be able to relate what God is doing in their own lives and that of local churches. As usual the meeting will be in the R2 Conference Room.

HORTICULTURAL SOCIETY Mr O J Clayton from the Royal Horticultural Society will be giving a lecture on "Bulbs for Colour Through the Year" on Tuesday 28 November at 7.30pm, in the Rutherford Laboratory Lecture Theature. The entrance fee is 25p members, 30p non-members - coffee and raffle.

FOLK CLUB Lovers of Folk Music will welcome the news that the Rutherford Laboratory Folk Club will be back in business on Friday 1 December at 8 pm in the Coffee Lounge of R22. It is hoped that support for this venture will be sufficient to make a monthly meeting viable and more important successful. The guest singer will be Paul Weaving, who has been heard on local radio, and is well known in this area.

Come and join us in a relaxed and happy evenings entertainment. The admission charge is 50p.
Further details may be obtained from Stephen Halliday Ext 492.

RUTHERFORD LABORATORY BULLETIN

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