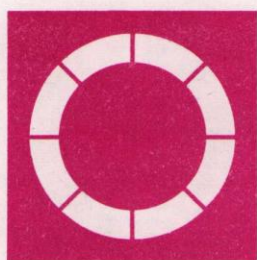


No 29/71
9 Aug 71



Rutherford Laboratory Bulletin

General News

SUPERCONDUCTING HOLDING MAGNET FOR THE FROZEN TARGET EXPERIMENT

The Frozen Target Experiment consists of a target which is polarised in a high homogeneity magnet field, cooled to 0.3°K and is then transferred to a holding magnet whose field holds off the polarisation delay.

To provide the holding magnet-field a superconducting magnet has been designed, built and recently successfully tested at the Rutherford Laboratory.

The design requirements were to produce a central magnetic field of about 3.0 tesla, and yet give a free scatter angle of 90° for high energy particles over an azimuthal plane of 350°. To meet these requirements, the magnet had to be designed as a split pair with 45° front faces and it was therefore difficult to put the ampere turns where they contributed most to the central field. Hence, it was necessary to achieve a very high current density and yet optimise the coil cross-section to give a low peak field.

An interactive graphics computer program was used to optimise the coils and special winding techniques were developed to pack the turns into the rather unusual optimised cross-section.

The final magnet consisted of 1mm diameter intrinsically stable Nb-Ti/cu wire, wound into two half coils which were potted in epoxy resin to prevent wire movement. By running the magnet at 2.2°K and a current of 275 amperes, a central field of 2.88 tesla was reliably produced. This gave an overall current density of 24,900 amps/cm². The magnet was very stable in operation and exhibited no change in performance after repeated runs up to the point where the superconductor went normal.

The holding magnet is the first potted superconducting magnet designed and built by the Rutherford Laboratory for a specific nuclear physics experiment.

NATIONAL SAVINGS CERTIFICATES - MONTHLY CYCLE ENDING 31 8 71

Certificates can be collected from the Cash Office, R20, from 1 September onwards. New members wishing to join the scheme can obtain enrolment forms from the Cash Office. Forms must be returned not later than 3 September 1971.

FILM NOTICE Period 9 commences Monday 9 August. Colour Strip - RED - for $\beta\gamma$ and fast neutron packs. Six monthly TLD for people with surnames commencing G, H, I. J. Please change all dosimeters promptly and return all old ones.

BULLETIN NOTICE The current issue of the Bulletin will again cover two weeks. Contributions for the next issue should be sent to the Editor not later than Wednesday 18 August.

VISITORS Thirty-six Air Training Corp Cadets from Abingdon will visit the Laboratory on Sunday 15 August.

FOUND A sum of money has been found and handed in to the Personnel Group. Enquiries should be made to Mr D Williams, Extn 495.

OVERSEAS VISITS Dr R Taylor and Mr G H Adamson to the USA 8-17 August to visit IBM at Poughkeepsie for discussions and test runs.

Mr P Wilde to West Germany 9-12 August to attend meeting at Erlangen University to draft the specification of a CAMAC programming language.

Mr L J C Appleby and Mr D A Morris to CERN 9-16 August in respect of the Omega Project and Installations.

Dr A T Lea and Mr C Balderson to CERN 10-13 August for discussions.

Machine Schedules

NIMROD Cycle 10 (10 8 71 - 31 8 71)

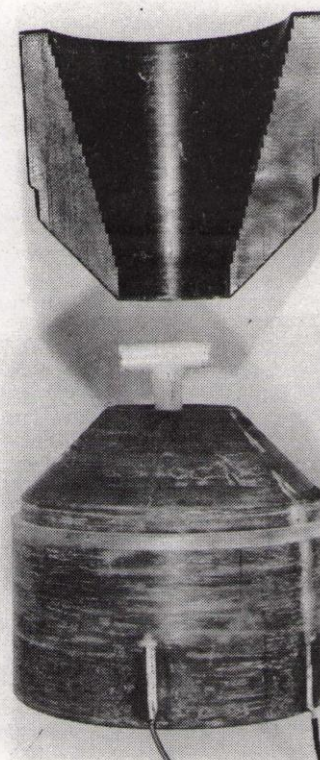
Machine Physics
High Energy Physics

Team
B⁺ham/RHEL

Beam
X2/K12A

Experiment
K⁺n Elastic Scattering and K⁺ Charge Exchange from
0.45 - 0.95 GeV/c.

Data



Model of two potted half-coils (bottom)
with one half section revealing the
windings (top).

Oxford Univ	K10s	Study of Neutral States in K^+p Reactions	Data
Glasgow Univ/RHEL	X3X/ π^9	Polarisation Measurements for π^+p Charge Exchange from 0.6 - 3.5 GeV/c	Setting up
Imp Coll/Soton Univ	π^7	Further Studies of the n, ω and A_2	Setting up
Camb Univ/RHEL	X2/K13C	Associated Production Measurements between Threshold and 1.5 GeV/c.	Setting up

Internal Events

Wed 11 Aug 11 am Conf Rm RI	HEP Disc Group	Prof M Kugler (Weizmann Inst)	Multiparticle Production
Mon 16 Aug 1130 am Lecture Theatre	Nimrod Lecture Series	Prof J Rosner (U of Minnesota)	Resonance Physics at Very High Energy
Wed 18 Aug 11 am Conf Rm RI	HEP Disc Group	Prof K Kang (Brown Univ)	Dual Amplitude Analysis of Inclusive Reactions

External Events

Mon 9 Aug 2.30 pm Clarendon Lab, Oxford	Elemnt. Part. Theory Sem	Prof Joseph Sucher (U of Maryland)	Shadows on the Light Cone
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Social News

C.S.M.A. Will all members please send the proxy card, delivered with the latest issue of 'Civil Service Motoring', complete with signature and membership number to L N Dutton, Building R25, Room 1.12 by 13 August. Your vote will be used against the proposed increase in C.S.M.A. subscription from £1.00 to £1.50.

C.S.M.A. OXFORD GROUP CLUBNIGHT 8 pm 13 August at the Duke of York, Oxford. A selection of films for your entertainment. Refreshments. Members and friends welcome. Local rep. L N Dutton, R25 Extn 224.

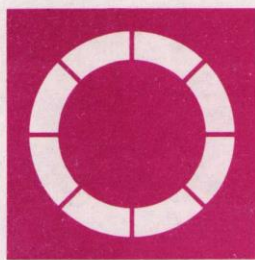
ROUNDERS Congratulations to the Rutherford Laboratory Rounders Team who became champions of their league without conceding a match. They attribute their success to dexterity, agility, holding on to the ball and a good sense of direction - you have to play to understand the subtleties! Where else can you chase a girl round the field legitimately. Congratulations also to the team captain Tony Stevens who bowled a maiden over in each match - and caught a fella by mistake (we hope).

CHRISTIAN FELLOWSHIP All welcome to come along to meetings on Fridays 13 and 20 August both at 1230 pm Conference Room R12.

Rutherford Laboratory
6 8 71
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H F NORRIS Extn 484
Scientific Admin Group
Building R20

No 30/71
23 Aug 71



Rutherford Laboratory Bulletin

General News

BULLETIN NOTICE The current issue of the Bulletin will again cover two weeks. Contributions for the next issue should be sent to the Editor not later than Wednesday, 1 September.

'VISITING SCIENTIST' APPOINTMENT John Fox has taken up a temporary appointment at CERN 11 as a "visiting scientist on the 300 GeV Project from 9 August 1971 for a total period of 3 years. During this time he will be working on the powering problem of the superconducting option for the machine and other related power supply topics. In addition John has been invited to serve a 3 year term of office from 1 October as a member of the Power System Planning Committee of the Institution of Electrical Engineers, London.

VISITING PROFESSOR Dr J D Lawson has accepted an invitation from Professor A W Trivelpiece to take up a 4 months appointment as 'Visiting Professor' at the University of Maryland. During this period he will be attached to the Plasma Physics Group working on relativistic plasmas and electron beams. John Lawson is leaving on 1 September and returns at the beginning of 1972.

COMPUTER NEWS The IBM 360/75 will be unavailable to users from 8 am to 11 am on the morning of Monday 23 August.

Due to essential building works a shutdown of approximately 36 hours may be called for on either the weekend 4-5 September or 11-12 September.

MISSING EQUIPMENT Special connecting cable for Marconi V321 camera/control unit, 37 cores (some co-axial), terminated at both ends with 37 pin plug and socket, about 100 yards long and wound on a small drum. Anyone with information on its present whereabouts is asked to contact A W Eastwood Ext 6684/6314 or B Callis Ext 6194.

FILM NOTICE It is period 9. Colour Strip - RED for B_y films and fast neutron packs. Please check that you are wearing the correct dosimeter and all old ones are returned.

RHEL AT GENEVA United Nations 4th International Conference and Exhibition on the Peaceful uses of Atomic Energy, 6-16 September 1971.

The RHEL is mounting a display of the principles of the Superconducting Energy Storage Transfer System. (Brief details of the system are described on page 140 of the 1970 R.L. Annual Report).

NATIONAL SAVINGS CERTIFICATES - MONTHLY CYCLE ENDING 31 8 71. Certificates can be collected from the Cash Office, R20 from 1 September onwards. New members wishing to join the Scheme can obtain enrolment forms from the Cash Office. Forms must be returned not later than 3 September 1971.

TRAINING SECTION NEWS - HARKNESS FELLOWSHIPS OF THE COMMONWEALTH FUND OF NEW YORK 1972.

Harkness Fellowships are awarded to a limited number of exceptional young men and women to enable them to further their education while becoming familiar with the people and culture of the USA. The closing date for applications to be received by the Commonwealth Fund is 28 October 1971.

CIVIL SERVICE COUNCIL FOR FURTHER EDUCATION PRIZE FUND All SRC staff are eligible to apply for these awards for meritorious performance in educational, cultural or recreational activities.

WORK STUDY APPRECIATION A course, designed for all levels of management on the basic principles of work study is to be run, over 9 evenings at the College of Technology, Reading.

COLLEGE ENROLMENTS 1971/1972 Details on this and the other training items can be obtained from Training Section, R20 ext 555.

OVERSEAS VISITS Dr M J O'Connell, to CERN 23 Aug - 6 September for discussions of software for OMEGA off-line analysis. Dr W G Williams to Israel 24 Aug - 1 Sept to attend Fourth International Symposium on Magnetic Resonance. Dr G Manning and Dr R L Sekulin to Yugoslavia 30 Aug returning 16 Sept and 10 Sept respectively to attend the International Summer School on Elementary Particle Physics. Dr S F Read to Yugoslavia 1-13 Sept to attend 2nd Ampère International Summer School on Magnetic and Optical Resonance. Dr D A Gray, Mr N M King, Dr D B Thomas, Dr P F Smith and Mr M Snowden to SACLAY France, 2-3 Sept to attend GESSS Collaboration Meeting.

Machine Schedules

NIMROD Cycle 10 (10 8 71 - 31 8 71)

Machine Physics : High Energy Physics (X2/K12A, K10s, X3X/π9, π7 and X2/K13C)

Full details of Cycle 10 were given in Bulletin No 29/71.

The schedule for Cycle 11 due to commence 1 9 71 will be given in the next Bulletin to be issued on Friday 3 September.

Internal Events

Wed 25 Aug 11 am
Conf Rm RI

HEP Disc
Group

Prof Ken Paler
(Purdue Univ)

Diffraction Production of Deuterium

Mon 6 Sept 1130 am
Conf Rm RI

Nimrod
Lecture Series

Dr G von Holtey
(Bonn)

Status of Pion Production in the First Resonance Region

Social News

SIX-A-SIDE FOOTBALL The second leg of the Rutherford and Atlas League commences with a game between Nimrod and Drawing Office on Wednesday 1 September, Kick-off at 12.45 pm

Rutherford Laboratory
20 8 71
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