



Rutherford  
Laboratory

21 January - 4 February 1974

bulletin

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#### A MATTER OF SOME (?) GRAVITY

For several years now, the experiments of Joseph Weber have intrigued physicists. If the gravity familiar in everyday life is not constant in time but is subject to tiny ripples due to the arrival of gravitational waves, then, if they are of sufficient intensity, it should be possible to detect them. Accelerated electrical charges radiate, and in turn the resultant radiation accelerates charges, as we all know from the TV transmission and reception. The laws of gravitational forces are similar to Coulomb's law for electrostatic forces: so it is plausible that accelerated masses should radiate. The outstanding question is whether it is possible to detect such radiation.

Weber says he can: two detectors set up near Chicago and near Washington show coincidences at rates significantly above the random rate (i.e. the rate when the signal from either detector is subject to time delay). Other workers have so far (i.e. over a period over about a year) failed to substantiate Weber's claim. A new local detector is now in operation: a detector at the Rutherford Laboratory is in coincidence with a detector at Sonning near Reading. Both detectors are of the split bar type proposed by Aplin of Bristol: they have a lower Q (ring time) than Weber's bar, but higher efficiency and much greater bandwidth. The picture below shows a calibration pulse (i.e. a genuine coincidence!) initiated from the time signal from Rugby. This time signal triggers an electrostatic pulse which gives the required very small hammer blow to the bar. This causes the bar to change its original oscillation which arises from Brownian noise, in either phase or amplitude. The output is handled by a filter and finally emerges in the form of a pulse.

Negative  
voltage  
signal  
↓



Sonning filtered signal

RL filtered signal

Time →



Sonning bar out

RL bar out

The response of the Sonning bar is piped over the telephone line to RL, where it is displayed, together with the response from the RL bar, on an oscilloscope. The top two traces show the filtered response to an input energy of 1 kT ( $\frac{1}{2}$  kT, the thermal noise in the bar, sets a lower limit to sensitivity). The bottom two traces show the corresponding actual bar response.

Pictures such as the above have been collected for about two months, and the collection will continue over the next several months: together with the exploration of alternative methods of signal recovery.

#### LADIES - YOUR ATTENTION PLEASE

A film entitled "Screening for Breast Cancer" is being shown in the Lecture Theatre on 31 January and repeated on 1 February. Full details are given in 'Internal Events' on page 2 of this Bulletin.

#### LIBRARY NOTICE

TRANSLATIONS Would people who are fluent in any foreign language and would be prepared to provide occasional translations, please contact the Librarian on Ext. 6668.

JANUARY SALES The Library will have more superseded and surplus books for disposal. As the last advert produced an embarrassing number of avid readers, books will be available from Monday 21 January in the reading room and will be restricted to two books per person.

#### LECTURE THEATRE BOOKINGS

All Lecture Theatre bookings should in future be made through H F Norris, Room 42, Ext. 484.



# INTERNAL EVENTS

## NIMROD LECTURE SERIES

Monday 21 January  
11.30  
Lecture Theatre

$K_L^0$  Decay

Professor S Wojcicki (Stanford University and CERN)

## HEP SEMINAR

Thursday 24 January  
11.00  
Conference Room, Building R1

Density Correlations of the Hadron Gas as the Origin of Early Multiplicity Scaling

D Weingarten/Orsay

## SEMINAR IN COMPUTING

Friday, 25 January  
9.30 - 12.30  
Conference Room, Building R12

Seminar on Book-Keeping Systems.

A number of book-keeping, master list and automatic job submission systems have been written for HEP experiments and an exchange of ideas on the subject might be useful. The main aims of the discussion, which will be fairly informal, are to determine if it is feasible to develop a more generalised system for use by different experiments and, if so, what desirable properties it should possess. Several people have been approached to prepare seminar notes for distribution before the meeting and it is hoped to incorporate these into a document as the proceedings of the seminar. Amongst those who have agreed to make contributions are:- Harry Renshall ( $\pi^9$ ) on the  $\pi^9$  system; Boda Franek (Bubble Chamber Group) on Bubble Chamber Automatic Job Submission; Chris Osland (C & A Division) on Automated Tape Handling; John Hart (K13C) on a proposed system for K13C; James Hutton (HEP Data Handling) on Event Book Keeping for the ISR Muon Experiment and Howard Sherman (Daresbury) on a Book Keeping System for Counter Experiments.

## PROPOSAL TALKS

Monday 28 January  
10.15, 11.00 and 11.45  
Lecture Theatre

10.00 Coffee in Restaurant Coffee Lounge.

10.15 Proposal No. 144 "A proposal to search for heavy long-lived integrally charged particles", by Dr P F Smith/RL. The talk will be given by Dr P F Smith.

11.00 Proposal No. 143 "A proposal for a Magnetic Recoil Spectrometer for the Gas Jet Target at NAL", Rutgers U/Rochester U/IC London. The talk will be given by Dr I Siotis/Imperial College.

11.45 Proposal No. 142 " $K^+p$  Interactions at 14 GeV/c using Omega", Birmingham U/Glasgow U. The talk will be given by Dr D R Turnbull/Glasgow.

*A possible way to look at deep inelastic phenomena - The massive quark model*  
~~No title available at time of going to press.~~

Dr G Preporata / Rome

## NIMROD LECTURE SERIES

Monday 28 January  
14.30  
Lecture Theatre

*Val Crookson*

## HEP SEMINAR

Wednesday 30 January  
11.00  
Conference Room, Building R1

A Self-Consistent Pomeron (This is the first of three informal talks Dr Cardy will give on this subject.)

Dr J L Cardy/Daresbury

## PROPOSAL TALKS

Wednesday 30 January  
14.15 and 15.15  
Lecture Theatre

Proposal No. 141 "Inelastic Neutrino Interactions at the SPS", CERN/Oxford/RL etc. The talk will be given by Dr G Myatt/Oxford.

Proposal No. 140 "Experiments with High Energy Charged Hyperons at the SPS", CERN/Orsay/RL etc. The talk will be given by Dr J J Thresher/RL.

## FILM

Thursday 31 January  
12.15  
Friday 1 February  
13.15  
Lecture Theatre

"Screening for Breast Cancer", a 30 minute film being shown for the female members of the Laboratory at the request of the Health Physics and Medical Division at AERE.

It is common knowledge that whereas cervical cancer mortality rate has steadily dropped since 1962, breast cancer has been the cause of an increasing number of deaths over the same period. To encourage a better understanding of the disease and to inform women how they can help to detect it at an early stage of development, BUPA Medical Centre has sponsored a film about screening for breast cancer. It is aimed at lay female audiences and pinpoints the importance of the disease statistically, describes the stages of its development by means of animation, instructs on self examination, covers the screening techniques used at the Medical Centre and interviews a successful survivor of a mastectomy.

Subject to the availability of medical staff it is hoped to have a Sister from the Medical Division at AERE in attendance to introduce the film and to answer any queries after each showing.

## SEMINAR IN COMPUTING

Friday 1 February  
11.00  
Conference Room, Building R12

The ULCC as a Regional Centre.

H J Down/University of London Computer Centre

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In 1972, the University of London Computer Centre installed a CDC 7600 and became a regional computing centre, offering services to a number of universities in the South East and South West of England. The development of the regional computing service will be discussed with particular reference to the performance of the 7600 and the operational problems encountered in running a large network of remote batch terminals.

#### NIMROD LECTURE SERIES

Monday 4 February  
11.30  
Lecture Theatre

$\pi\pi$  Scattering: How Crossing and Analyticity can Ruin Your Phase Shift Analysis.

Dr M Pennington/RL

#### NIMROD USERS MEETING

Monday 4 February  
14.15  
Lecture Theatre

The two main items for discussion are:-

- (a) Beam Lines for Nimrod in 1975.
- (b) A Talk on Proportional Counters, by Dr Bateman.

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## EXTERNAL EVENTS

#### SEMINARS AT Q.M.C, LONDON - 16.15 hrs

- 21 Jan: Dr D Sherrington/Imp. Coll. - Magnetism in Alloys of Transition Metals.
- 28 Jan: Dr Chan Hong-Mo/RL - Inclusive Reactions.
- 4 Feb: Dr I J R Aitchison/Oxford - Scale Invariance in Quantum Field Theory.

#### COLLOQUIA AT UNIVERSITY OF BRISTOL - 1700 hrs

- 21 Jan: Dr S S J Cox/RL - Nuclear Magnetic Ordering.
- 28 Jan: Mr J M M Miller/Inst. of Geological Sciences - Instrumentation and Techniques in Prospecting.
- 4 Feb: Dr R E Jennings/UCL - Infra-Red Astronomy from Balloons.

#### PHYSICS COLLOQUIA, READING UNIVERSITY - 17.00 hrs

- 21 Jan: Dr B J Parsons/Reading - The Raman Effect in Diamond at High Pressures.
- 28 Jan: Mr S Messoloras/Reading - Cold Neutron, Small Angle Scattering from Al-Zn Alloys.
- 4 Feb: Miss J Lazenby/Reading - Spectroscopy of Laser Produced Plasmas.

#### THEORETICAL PHYSICS SEMINARS, MANCHESTER - 14.30 hrs

- 23 Jan: Dr C J Isham/King's Coll London - Quantum Gravity: the state of the Art.
- 30 Jan: Prof. P W Anderson/Cambridge - Anisotropic Superfluidity in He<sub>3</sub>

#### APPLIED PHYSICS COLLOQUIA, READING UNIVERSITY - 16.30 hrs

- 23 Jan: John Gurd - Pictures, Television and Computers.
- 30 Jan: Prof. J E Gordon - The Structures in Our Lives.

#### ELEMENTARY PARTICLE PHYSICS SEMINARS, OXFORD - 14.30 hrs

- 24 Jan: Dr A Jones/Oxford & NRPB Harwell - The  $I=0, J=0 \pi\pi$  Scattering Amplitude as Determined from the Reaction  $\pi N \rightarrow \pi N$  at Low Energies.
- 31 Jan: Dr T White/Oxford - High Momentum Transfer Phenomena.
- Dr W Allison/Oxford - Antiproton-proton Elastic Scattering at 2.32 GeV/c.

#### COLLOQUIA AT CLARENDON LAB OXFORD - 16.15 hrs

- 25 Jan: Dr M N Kabler/Washington - The Self-Trapped Exciton.
- 1 Feb: Dr R N Franklin/Oxford - Linear & Non Linear Effects Involving Plasma Waves.

#### SEMINARS & LECTURES AT DARESBURY - all at 16.00 hrs

- 28 Jan: Dr J Kasman/Westfield - Two Particle Correlations at High Energies (Seminar for both theoreticians & experimentalists).
- 29 Jan: G Preparata/Rome - Title to be announced.
- 4 Feb: Dr R Peccei/RL - Building Models the Inclusive Way.

#### NP DIV. COLLOQUIA IN CONF RM H.8. AERE at 15.30 hrs

- 24 Jan: Dr T Francis/Inst. of Geological Sciences - Recording Earthquakes on the Mid-Atlantic Ridge.
- 31 Jan: Dr D Viggars/NP Div. - Some Recent  $\gamma$ -Ray Spectroscopy in the s-d Shell.

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## SOCIAL NEWS

#### ATLAS & RUTHERFORD LABS TABLE TENNIS NEWS

- Div. II Rutherford A drew with AERE D, 5-5
- BRSA E drew with Atlas A, 5-5
- Div IV Atlas C lost to Abingdon, 4-6
- Atlas C lost to Esso D, 4-6

Atlas A managed to take a point off AERE D after losing to them in the first half of the season. Unfortunately the A team could only field two players against BSRA E, whom they beat previously. Atlas C results are improving now they have been strengthened by the addition of the old B team players. The Club has purchased a new table for matches in addition to the two practice tables.

#### CHRISTIAN FELLOWSHIP, R12 CONF. ROOM at 12.30 hrs

- 25 Jan: Pastor Roy Chewter of the Bible Pattern Church Newbury will be speaking and all are welcome to attend.
- 1 Feb: Meyrick Wyard of R18 will be leading our monthly prayer meeting and all are welcome to join us.

#### SOCCER FINAL - RUTHERFORD CHALLENGE TROPHY

Friday 25 January - Kick-off 14.45

C.A. Div. (Green Strip) v Bldg 351 Harwell (Red Strip)

Referee J Seymour

#### RUTHERFORD LABORATORY BULLETIN

Published by the Scientific Administration Group

Editor: H F NORRIS

Deadline  
for  
Insertions

GENERAL & SOCIAL NEWS

INTERNAL & EXTERNAL EVENTS

Tuesday 1600

Wednesday 1200

Room 42 Building R20  
Rutherford Laboratory  
Chilton Didcot Berks  
Abingdon 1900 Ext 484



# FILM BADGE NOTICE

It is Period 1. Colour Strip - YELLOW for 8y films. Period 2 commences Monday 28 January.  
Do please ensure that all old dosimeters have been returned to enable the total doses for 1973 to be compiled.

# MISSING EQUIPMENT

The following item of equipment has been reported missing from Lab 5, R1:-

Polaroid Colour Pack Camera Model 250 Ser/No. 2A 477052 together with a close-up kit

Anyone with information on the present whereabouts of this item is asked to contact R G Bendall on Ext. 318.

The following item of equipment has been reported missing from Room 8, R20:-

Hotpoint Gala Convector Heater (2 kw) - RL No. 14/4396 (labelled 02511)

Anyone with information on the whereabouts of this item is asked to contact Inventory Section, Building R20, Ext 570.

# OVERSEAS VISITS

Dr T G Walker, to CERN, 20 - 22 January, to attend neutrino collaboration meeting and SPSC Open meeting.

Dr P H Sharp, to CERN, to supervise installation of R204, Muon Analysis and to attend SPSC.

Mr A T B Webber, to CERN, 20 January - 2 February for organisation of GEC 2050 workstation.

Messrs R A Barnard, D A Morris and P A Hawthorne, to CERN, 21 - 25 January, to check and establish correct functioning of equipment for 124 project.

Dr F J Wickens, to CERN, 21 - 25 January to work on S120 experiment.

Messrs K A Freestone, A G Dobbs, A H Chilvers and J D Hammond, to CERN, 21 January - 1 February for modification work on spark chambers for S120 experiment.

Dr W G Williams and Mr B Mack, to Vienna, 22 - 24 January, for discussions with Dr H W Weber of Atominstitut der Osterreichischen Hochschulen on problems associated with research reactors; Dr Williams will also give a Seminar.

Dr T G Walker and Dr R L Sekulin, to Formigal, Spain, 26 January - 3 February, to attend 2nd International Winter Meeting on Fundamental Physics. Dr Sekulin will give a Seminar and return on 4 February.

The Director, to CERN, 27 - 28 January, to attend meeting of ECFA Working Party.

# EDITOR'S NOTICE

Contributors are reminded that deadlines are shown each issue at the bottom of page 3. Please adhere to the days and times shown: in particular, entries for Internal Events are not arriving on time.

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## TELEPHONE DIRECTORY ALTERATIONS

To be made to the new RL Telephone Directory issued mid-December

### ADDITIONS

BROWN MRS J A M	585	R20 .70	ADM PER
DASS DR G V	539	R1 2.28	TH
CARLILE DR C J	6145	R20 85	NBRU
DENNIS A C	346	AL 21	AL
WHITEHORN MRS R P	6143/525	R20 71	ADM GA
HOPKINS MRS D A	6106	AL 42	AL ADGR
LINTERN MRS J A	302	R1 1.77	ADM GA
Secretary to Dr Lipman & Dr Astbury			
BARRETT MRS B D	6289	AL	AL ADGR
DENTON D J	6384	AL	AL OPBR
LESTER R P	6205/6615	R2 G.14	ADM GA
PENFOLD J	599/6148	R1 2.3	NBRU
RIMEN MRS A R C	495	R20 65	ADM PER
SMITH P J	263	R1 2.26	ADM GA
PORTER MRS S	258	R1 2.74	ADM GA

### ALTERATIONS

SIMMS G J	delete	438 rm 2.16	add	6160	rm 2.26
MELLANBY A A	"	438 rm 2.16	"	6160	rm 2.26
FERGUSON N	"	438 rm 2.16	"	6160	rm 2.26
LASCELLES R	"	438 rm 2.16	"	6160	rm 2.26
NORTON H	"	6601 rm 1.20	"	6651	rm 1.09
KERR J C	"	373 rm 1.25	"	6601/6133	rm 1.20
MOTT E M	"	rm G.4	"	373	rm 1.25
ROAN J E	"	244	"	392	
GUTTERIDGE S E	"	367 R32	"	353	R16
EDWARDS V W	"		"	288	
GOVER R P	"	6260 R25	"	6306	R6
JUNKINSON MRS P	"	6256	"	6154	
KENT D	"	6676 R51 G04	"	6155	R3
WALKER MRS J A	"	429	"	6386	