

CERN/INTC 2000-048  
INTC 6  
14 December 2000

## ISOLDE AND NEUTRON TIME-OF-FLIGHT EXPERIMENTS COMMITTEE (INTC)

Minutes of the sixth Meeting on  
Monday, 27 November 2000

### OPEN SESSION

After few brief introductory remarks, the Chairman called on M. Lindroos, to report on the technical status of the ISOLDE facility on behalf of the PS ISOLDE team.

This report was mainly devoted to the ISOLDE consolidation project which consists of two parts. The first (connected with improving radiation safety in buildings 179, 838 and 170) will bring buildings 179 and 838 to compliance with European legislation Class A requirements, and building 170 to those of Class C. In addition, the target manipulation robot is being renovated. The second part aims at ensuring that the number and quality of ISOLDE shifts delivered to experiments each year is adequate, and includes, among others things, new front-ends, better target manufacturing facilities, high resolution mode operation of the HRS and improvements of secondary beam transport facilities. M. Lindroos remarked that while the carrying out of the consolidation programme work will not adversely affect the planned physics programme the lack of a spare front-end for the 2001 run could have an effect on the GPS programme as the GPS front-end is coming towards the end of its projected life-span.

In his ISOLDE Coordinator's report, Thomas Nilsson described the recent physics schedule and the status of the ISOLDE scientific programme. After 31 calendar weeks in 2000, 289 RIB experimental and 35 test RIB shifts had been delivered, and these figures were expected to rise to 297 and 50 respectively by the 2000-2001 shutdown. Out of these the shift figures for the HRS are 50 (after 31 weeks) and 67 (at the shutdown). The yield test at 600 MeV Booster energy will be carried out in the remaining time before the shutdown. The physics topic breakdown during 2000 was: Solid state physics 22 %, weak interactions and nuclear physics 47 %, atomic physics 16 %, medical and biological physics 3 % and particle- and astro- physics 12 %.

In the absence of E. Radermacher, the nTOF status report was given by C. Borcea. All commissioning up to the 187 m collimator has been finished, with PS intensities between 1 and 4 times  $10^{11}$  protons per bunch. Preliminary conclusions are that the nTOF behaves as expected with acceptable radiation levels, although additional measurements will be necessary in April 2001 to arrive at final figures. A more permanent performance monitoring system will also have to be installed, and will be discussed at the next INTC.

At the previous INTC meeting, a technical design report had been requested by the Committee for the nTOF experimental area. This has now been received and its contents were presented by P. Pavlopoulos.

The Open Session then proceeded to hear presentations of the following proposals and requests for further beam time:

**P86 Add. 1** (INTC 2000-039): Studies of High- $T_C$  Superconductors Doped with Radioactive Isotopes.

**P132** (INTC 2000-038): Studies of Colossal Magnetoresistive Oxides with Radioactive Isotopes.

**P113 Add. 1** (INTC 2000-037): Decay study for the very neutron-rich Sn nuclides, <sup>135-140</sup>Sn separated by selective laser ionization

**P133** (INTC 2000-041): Radiotracer spectroscopy on group II acceptors in GaN.

**P134** (INTC 2000-042): Exploring the dipole polarizability of <sup>11</sup>Li at REX-ISOLDE.

## CLOSED SESSION

Present: B.W. Allardyce, J. Aystö, C. Détraz, J. Eades (Secretary), J-P. Duraud, H. Flocard (Chairman), K-L. Kratz, M. Lindroos, T. Nilsson, J-P. Riunaud, C. Rossi-Alvarez, B. Rubio, W. Scobel, R. Voss, K.P. Lieb, K. Langanke, J. Suhonen, J. Kluge, P. Walker.

Apologies: H. Ravn, E. Migneco, P. van Isacker, W. David

The Chairman first welcomed Jouhi Suhonen and Jürgen Kluge as new members of the Committee replacing Piet van Isacker and William David, and the minutes of the last meeting were approved with the deletion of the word "facility" (last paragraph of page 1) in the open session discussion concerning REX-ISOLDE.

The Committee first discussed the various technical and scientific progress reports presented in the open meeting as follows:

1. ISOLDE technical status report

This was highly appreciated by the Committee as showing ordered progress on all fronts. PS Division's evident commitment to the ISOLDE consolidation programme was considered to be a worthy investment in the future of the facility, and the Committee fully supports the programme outlined by M. Lindroos.

2. ISOLDE scientific status report

The Committee congratulated the ISOLDE collaboration and CERN ISOLDE teams on the extensive physics results obtained in 2000.

3. nTOF Technical report

The Committee appreciated the positive nature of the progress report on the nTOF presented by C. Borcea and congratulated the team on the quality of the nTOF beams revealed in these first measurements. It was noted however that the need for further tests will affect the research programme and the Committee asked for a clarification of this situation at the next meeting. Particular questions to be addressed include a) what further measurements need to be taken for the completion of the commissioning phase b) when the collaboration expects to take over from the development group and c) whether the commissioning period already foreseen needs to be prolonged substantially.

4. nTOF Experimental area Technical Design Report

It was agreed that many questions raised previously by the INTC had been answered by the extensive and up-to-date document summarised by P. Pavlopoulos in his presentation (INTC 2000-018). The TDR was therefore **accepted**. A few further questions of detail can nevertheless be expected in future and a report on the evaluation of new experimental data is expected at the end of 2001.

The presentations of the five proposals presented in the open meeting were then discussed as follows:

5. **P86 Add. 1** (INTC 2000-039): Studies of High- $T_C$  Superconductors Doped with Radioactive Isotopes  
**P132** (INTC 2000-038): Studies of Colossal Magnetoresistive Oxides with Radioactive Isotopes

These two proposals were discussed together as they involve the same groups and use similar experimental techniques. It was also noted that they both have potential practical applications, although their aims fall for the moment in the domain of non-patentable basic research. The INTC agreed to **recommend** the full 26-shift allocation to the Research Board for **P132** and half of the requested time (13 shifts) for **P86 Add. 1**. In the latter case, the work should concentrate on what was considered to be the most innovative field, that of Infinite Layer Cuprates. The remaining allocation may be supported following a subsequent progress report.

6. **P113 Add. 1** (INTC 2000-037): Decay study for the very neutron-rich Sn nuclides,  $^{135-140}\text{Sn}$  separated by selective laser ionization

The INTC **appreciated** the presentation of data from **P113**. The  $^{135}\text{Sn}$  nuclide is interesting from both the nuclear structure and astrophysical points of view and the collaboration is encouraged to carry on the exploration of this region. The Research Board will be asked to approve the 15 further shifts requested, it being understood that the collaboration should participate actively in the technical developments they are requesting.

7. **P133** (INTC 2000-041): Radiotracer spectroscopy on group II acceptors in GaN.

Questions concerning Be and Mg related defects in GaN, a material used in 'blue' lasers, were both thought to be worth studying, and the Committee will **recommend** that the 16-shift total requested be approved by the Research Board.

8. **P134** (INTC 2000-042): Exploring the dipole polarizability of  $^{11}\text{Li}$  at REX-ISOLDE.

The amount of dipole polarizability information that can be extracted from the measurements is clearly dependent on the precision obtained. Some questions were therefore raised about whether the statistical errors would be small enough with a 22-shift allocation. The answer to this question depends on what  $^{11}\text{Li}$  intensity will be available from REX-ISOLDE and on the purity of the beam. Given the evident interest of the topic the Committee therefore received the experiment favourably, but regrets that it is unable for the moment to recommend a value for the beam time allocation. It will consider the situation again when answers to these questions are available. In the meantime, the INTC also **encourages** the collaboration to prepare an analysis of the statistical and systematic uncertainties, based on the foreseeable production rates of REX-ISOLDE.

## OTHER BUSINESS

The INTC took note of the following Letters of Intent:

- I34** (INTC 2000-043): High Resolution X-Ray Fluorescence after Electron Capture in Ni-56.

The Letter of Intent asks for three brief feasibility experiments on X-rays following electron capture in  $^{56}\text{Ni}$ . The Committee cannot support these without clarification of many issues that arose during its discussion. The authors are, however, invited to take these up with the Chairman.

**I35** (INTC 2000-044): Nuclear binding around the rp - process waiting points  $^{68}\text{Se}$  and  $^{72}\text{Kr}$ .

The Letter of Intent requests development of several target-ion sources. The INTC found the L.o.I. sufficiently interesting to encourage the authors to present a full proposal.

**I36** (INTC 2000-045): Proton angular distribution from oriented  $^{147}\text{Tm}$  high-spin isomer.

The Committee will welcome a full proposal on this topic.

Before closing the session, the Chairman expressed the Committee's thanks to the outgoing members, Karl-Ludwig Kratz and Phil Walker, for their dedication and hard work during their mandate which expires with the current meeting.

The next INTC meeting is on **Monday 26 February 2001**, for which the deadline for submission of proposals will be Friday 2 February 2001.

The dates of the other INTC meetings for 2001 are:

February, 26-27  
April 23-24  
September 24-25  
November 26-27.

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