CERN RESEARCH BOARD

MINUTES OF THE 175th MEETING OF THE RESEARCH BOARD
HELD ON WEDNESDAY, 1 MARCH 2006

Present

Apologies
L. Alvarez-Gaume

Items
1. Procedure
2. Report from the LHCC meeting of 15-16 February 2006
3. Report from the SPSC meeting of 24-25 January 2006
4. Report from the INTC meeting of 20-21 February 2006
5. Any other business
1. PROCEDURE

1.1 R. Aymar opened the meeting, noting that this would be the last time that J. Äystö presents the report from the INTC. He was thanked for his clear reports on the diverse physics topics that are covered by that committee. His replacement as chairperson of the INTC, M. Huyse from the University of Leuven, was welcomed.

1.2 The minutes of the Research Board held on 1 December 2005 [1] were approved without amendment. There were three matters arising from the minutes, listed in the following paragraphs.

1.3 Under paragraph 2.2, concerning the approval of T2K as a recognized experiment, it was stated that their specific requests concerning the magnet and test-beam space will be subject to a document to be drawn up by the PH department in agreement with the collaboration. J.J. Blaising stated that this has not yet occurred, as the PH department is awaiting information to be provided by the experiment.

1.4 Under paragraph 3.3, concerning the resources required for the upgrade of ISOLDE, it was stated that a report should be prepared by the AB department in consultation with the ISOLDE collaboration, and with input from the TS, PH and AT departments, in time for a decision to be taken at the Research Board meeting in June. S. Myers confirmed that progress is being made towards the report, which should be ready for the next meeting.

1.5 Under paragraph 5.3, concerning the proposal P326, the SPSC recommended for approval the continuation of their R&D programme in 2006, and this was endorsed by the Research Board, but subject to the outcome of the ongoing discussion of the resources required, between the CERN management and the PH department. J.J. Blaising stated that no funds are currently available in the PH department budget for this R&D programme, but that options were being investigated to eventually find the resources required. This item therefore remains pending.

2. REPORT FROM THE LHCC MEETING OF 15-16 FEBRUARY 2006

2.1 S. Bertolucci reported on the recent LHCC meeting [2]. He reviewed the status of the ALICE, ATLAS, CMS, TOTEM and MOEDAL experiments. A physics TDR submitted by CMS, and a TDR from the LHCf experiment, will both be considered at the next meeting. He then discussed the Comprehensive Review of LHCb [3]. The LHCC considers that good progress has been made by the experiment in the last year: although the schedule is tight for a number of subdetectors, it is realistic to expect that LHCb will have a
working detector installed in time for the start of LHC operation in 2007. The Research Board took note of the report.

2.2 S. Bertolucci also discussed the LHCC review of the Computing TDRs from the four large LHC experiments and the LCG project [4]. The LHCC finds the system architectures proposed for the computing adequate to achieve the physics goals stated in the Technical Proposals, and congratulates the collaborations and the LCG project for the work presented in the TDRs. As the LCG moves from a development project to a global service, the committee recommends that a Computing Coordinator be appointed to work together with the CERN management, the LCG project and the four experiments, to reinforce the connection between the computing plans and physics goals of the experiments. The TDRs were recommended for approval by the LHCC, and this was endorsed by the Research Board.

3. REPORT FROM THE SPSC MEETING OF 24-25 JANUARY 2006

3.1 J. Dainton reported on the recent SPSC meeting [2], including reviews of the experiments at the AD: ATHENA/AD-1, which has completed data taking, ATRAP/AD-2 and ASACUSA/AD-3, which will continue to run with upgraded detectors this year, and ALPHA/AD-5, which is under construction. The proposal for a continuation of ACE/AD-4 will be considered at the next meeting. All experiments favour the construction of ELENA, the extra-low-energy antiproton ring, if funding is possible. S. Myers commented that the feasibility of ELENA is under study, and a report will be prepared for the Research Board meeting on 31 August. The Research Board took note of the report.

3.2 Concerning the SPS schedule for this year, the SPSC supports the request from CALICE, the calorimeter R&D project for the ILC, for which 6 weeks of test beam time have been included in the schedule prepared by C. Rembser. OPERA has requested two periods of CNGS beam during the year [5], and the SPSC considers the request for both periods to be well justified. The committee noted that if this request is accommodated, it will still be possible for COMPASS to complete data taking for its measurement of $\Delta G/G$, albeit at the cost of some reduction in the data that would be taken with their transversely polarised target.

3.3 C. Rembser then presented the accelerator schedule [6]. The request from OPERA for two periods of CNGS beam has been included, with a low intensity run of up to $0.3 \times 10^{19}$ protons on target in the first two weeks of July, and a second, high intensity, run (with three
extractions to CNGS per supercycle) starting at the end of August and currently foreseeing an additional $1.0 \times 10^{19}$ p.o. The schedule was approved by the Research Board, noting that the second CNGS run should only start once a significant target mass has been installed in OPERA. The total fluence that is delivered to the CNGS target during the year will be monitored, and adjusted if necessary to stay within the limits agreed with respect to INB regulations.

3.4 J. Dainton finally discussed the proposed CLOUD experiment, for the study of the influence of cosmic rays on cloud creation, which might play a significant role in climate change. The original proposal for the experiment was submitted in 2000 [7], to use beam provided by the PS incident on a large vessel that can simulate the conditions of cloud formation in the atmosphere. The proposal was reconsidered in 2004 [8], and on request of the SPSC, presented to the national funding agencies of the collaboration, with positive responses [9]. The SPSC has recommended the experiment for approval. J.J. Blaising commented that this form of interdisciplinary research could be an attractive topic to receive funding from the EU. However, it is not yet clear what resources would be required from CERN, particularly for coordinating the work of the diverse institutes that make up the collaboration, many without particle physics experience. The Research Board approved CLOUD subject to the necessary resources being available: further discussion should take place to establish this, between the collaboration and the CERN management. The reference number of the experiment will be PS215.

4. REPORT FROM THE INTC MEETING OF 20-21 FEBRUARY 2006

4.1 J. Äystö reported on the recent INTC meeting. Twelve ISOLDE proposals were recommended for approval, for a total of 184 shifts (out of 268 requested). They are listed in the following paragraphs.

4.2 P127 Add.2 Studies of electric dipole moments in the octupole collective regions of heavy Radiums and Bariums [10] was approved for 4 shifts, and will continue to be known as IS386.

4.3 P144 Add.1 Electron conversion and gamma-gamma measurements complementary to the study of the beta decay of $N \approx Z$ Kr and Sr nuclei with a Total Absorption Gamma-ray Spectrometer [11] was approved for 15 shifts, and will continue to be known as IS398.

4.4 P156 Add.3 Coulomb excitation of neutron-rich $A \approx 140$ nuclei [12] was approved for 15 shifts, and will continue to be known as IS411.
4.5 **IS413** High-Precision Mass Measurements of Exotic Nuclei with the Triple-Trap Mass Spectrometer [13] was **approved for a further 30 shifts**.

4.6 **IS415** Magnetic moments of Coulomb excited first 2+ states for radioactive beams of \(^{132,134,136}\)Te and \(^{138}\)Xe isotopes at REX-ISOLDE [14] was **approved for a further 12 shifts**.

4.7 **P191 Add.1** A Study of the r-Process Path Nuclides, Sb-137, Sb-138, Sb-139 Using the Enhanced Selectivity of Resonance Ionization Laser Ionization [15] was **approved for 15 shifts**, and will continue to be known as IS434.

4.8 **P199** Shape effects along the Z=82 line: study of the beta decay of \(^{188,190,192}\)Pb using total absorption spectroscopy [16] was **approved for 7 shifts**, and will be known as IS440.

4.9 **P201** Ultra fast timing measurements at \(^{78}\)Ni and \(^{132}\)Sn [17] was **approved for 19 shifts**, and will be known as IS441.

4.10 **P202** Diffusive, Structural, Optical, and Electrical Properties of Defects in Semiconductors [18] was **approved for 20 shifts**, and will be known as IS442.

4.11 **P203** Mossbauer studies of dilute magnetic semiconductors [19] was **approved for 20 shifts**, and will be known as IS443.

4.12 **P206** Exploring halo effects in the scattering of \(^{11}\)Be on heavy targets at REX-ISOLDE [20] was **approved for 9 shifts**, and will be known as IS444.

4.13 **P207** Experiments with the newly available Carbon beams at ISOLDE – resonance scattering and decay studies [21] was **approved for 18 shifts**, and will be known as IS445.

4.14 Concerning the nTOF facility, a design study for the upgrade of the neutron spallation source is underway, estimated to take 3 months, followed by 9 months for construction of the new target. Three proposals for experiments at nTOF have been recommended for approval by the INTC: **P204** Proposed study of the neutron-neutron interaction at the CERN nTOF facility [22] requesting \(0.2 \times 10^{19}\) protons; **P208** The role of Fe and Ni for s-process nucleosynthesis in the early Universe and for innovative nuclear technologies [23] requesting \(1.8 \times 10^{19}\) protons; **P209** Angular distributions in the neutron-induced fission of actinides [24] requesting \(0.15 \times 10^{19}\) protons. **The three proposals were approved by the Research Board**, subject to the completion of a Memorandum of Understanding between CERN and the nTOF collaboration concerning the resources required; for **P204** the approval is in addition subject to a study first being made of whether there are safety issues related to the operation of its target.
5. ANY OTHER BUSINESS

5.1 The next meeting of the Research Board will be held on Wednesday 7 June.

ENCLOSURES

1. Minutes of the 80th LHCC meeting held on 15-16 February 2006.
2. Minutes of the 75th SPSC meeting held on 24-25 January 2006.

REFERENCES

[10] Studies of electric dipole moments in the octupole collective regions of heavy Radiums and Bariums, INTC-2006-002/P-127 Add. 2
[11] Electron conversion and gamma-gamma measurements complementary to the study of the beta decay of $^N \approx Z$ Kr and Sr nuclei with a Total Absorption Gamma-ray Spectrometer, INTC-2005-028/P-144
[12] Coulomb excitation of neutron-rich $A \approx 140$ nuclei, INTC-2006-013/P-156 Add. 3

[14] SR on the Experiment IS415 at CERN – Magnetic moments of Coulomb excited $2^+_1$ states for radioactive beams of $^{132,134,136}$Te and $^{138}$Xe isotopes at REX-ISOLDE, INTC-2006-014/SR-005/P-166


[16] Shape effects along the Z=82 line: study of the beta decay of $^{188,190,192}$Pb using total absorption spectroscopy, INTC-2005-027/P-199

[17] Ultra Fast Timing Measurements at $^{78}$Ni and $^{132}$Sn, INTC-2006-003/P-201


[19] Mossbauer studies of dilute magnetic semiconductors, INTC-2006-005/P-203

[20] Exploring Halo effects in the scattering of $^{11}$Be on a heavy target at REX-ISOLDE, INTC-2006-010/P-206

[21] Experiments with the newly available Carbon beams at ISOLDE – resonance scattering and decay studies, INTC-2006-011/P-207

[22] Proposed study of the neutron-neutron interaction at the CERN nTOF facility, INTC-2006-006/P-204

[23] The role of Fe and Ni for s-process nucleosynthesis in the early Universe and for innovative nuclear technologies, INTC-2006-012/P-208