

CERN/DG/Research Board 2007-378

Minutes-179

28 February 2007

ORGANISATION EUROPEENNE POUR LA RECHERCHE NUCLEAIRE  
**CERN** EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

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**CERN RESEARCH BOARD**

**MINUTES OF THE 179th MEETING OF THE RESEARCH BOARD  
HELD ON WEDNESDAY 21 FEBRUARY 2007**

Present R. Aymar (Chairman), L. Alvarez-Gaume, S. Bertolucci, J. J. Blaising,  
P. Ciriani, J. Dainton, J. Engelen, M. Ferro-Luzzi, R. Forty (Secretary),  
L. M. Fraile, E. Heijne, M. Huyse, J. Knobloch (replacing W. von Rden),  
P. Lebrun, S. Myers, C. Rembser

Invited G. Drexlin, A. Ceccucci, A. Watson

Apologies W. von Rden

Items

1. Procedure
2. Application of KATRIN to become a Recognized Experiment
3. Status report from Auger as a Recognized Experiment
4. Report from the LHCC meeting of 31 January-1 February 2007
5. Report from the SPSC meeting of 6-7 February 2007
6. Report from the INTC meeting of 15-16 February 2007
7. Any other business

## 1. PROCEDURE

- 1.1 The **minutes** of the Research Board held on 29 November 2006 [1] were approved without modification.

## 2. APPLICATION OF KATRIN TO BECOME A RECOGNIZED EXPERIMENT

- 2.1 G. Drexlin presented KATRIN, the Karlsruhe Tritium Neutrino experiment [2], which has applied for CERN Recognized Experiment status. Their scientific objective is the model-independent measurement of the absolute electron-neutrino mass with a sensitivity of  $0.2 \text{ eV}/c^2$ , by the precise study of the end-point of the electron energy spectrum from tritium  $\beta$ -decay. Improvement in sensitivity over previous experiments should follow from their high statistics, with increased source luminosity and long running time, and with reduced systematic error by reducing energy losses in the source.
- 2.2 A. Ceccucci then gave his report as CERN rapporteur. KATRIN is an important project, which satisfies the conditions for becoming a recognized experiment, and should bring added value to CERN in particular through intellectual exchange concerning the advanced techniques involved, including precise cryogenic control and ultra-high vacuum techniques. **The Research Board granted recognized experiment status at CERN to KATRIN, with reference number RE14. This will be reviewed after a period of three years.**

## 3. STATUS REPORT FROM AUGER AS A RECOGNIZED EXPERIMENT

- 3.1 A. Watson gave a status report from the Pierre Auger Observatory, which became a recognized experiment at CERN in 1998. The experiment studies the highest energy cosmic rays ( $> 10^{19} \text{ eV}$ ) with unprecedented precision. 1266 surface detector stations, containing water Cherenkov detectors, have been deployed over an area of about  $3000 \text{ km}^2$  in the Argentinean pampas, and four fluorescence buildings each equipped with six telescopes observe the sky above, allowing signals from the two different

detector systems to be correlated. Data taking is underway, while installation of the full system is expected to be completed by the end of this year.

- 3.2 The CERN rapporteur for this experiment, J. Kirkby, could not be present but sent a written report [3]. **The Research Board approved the continuation of recognized experiment status for Auger/RE3 for a further three years.**

#### **4. REPORT FROM THE LHCC MEETING OF 31 JANUARY-1 FEBRUARY 2007**

- 4.1 S. Bertolucci reported on the recent LHCC meeting [2], including the status of ALICE, ATLAS, CMS, TOTEM, the LCG, and a Comprehensive Review of LHCb [4]. Concerning electronics for the LHC and future developments, the current LHC Electronics Coordinating Committee (LECC) workshops are evolving into a wider electronics forum called Topical Workshop on Electronics for Particle Physics (TWEPP). **The Research Board took note.**

#### **5. REPORT FROM THE SPSC MEETING OF 6-7 FEBRUARY 2007**

- 5.1 J. Dainton reported on the recent SPSC meeting [2], including the annual reviews of the experiments ATRAP, ASACUSA and ALPHA at the AD. The SPSC congratulates the experiments for the good progress, and strongly supports their beam time requests for 2007. S. Myers pointed out that in the absence of additional resources for consolidation of the AD, its maintenance will continue to be on a best-effort basis.
- 5.2 The SPSC supports the completion of the COMPASS experiment's physics programme with muon beam, in particular the measurement of the gluon polarization in the nucleon,  $\Delta G/G$ . COMPASS has also requested to run with a hadron beam, for physics goals including the search for glueballs and non- $q\bar{q}$  states. The SPSC wishes to better understand the potential for COMPASS to conclusively address these physics issues, and defers its recommendation concerning this run until its next meeting. **A**

**decision concerning approval of the hadron run for COMPASS will be taken at the next Research Board meeting after the SPSC has made its recommendation.**

- 5.3 The NA49 experiment has requested a pilot run in 2007 using a proton beam on carbon target, to make measurements of hadron production that will be relevant to T2K and cosmic ray experiments. A further programme of physics is being considered for future running of NA49, including heavy ion beams, that will need to be reviewed by the SPSC before any recommendation is made. **The Research Board approved the pilot run of NA49 in 2007, subject to the availability of the resources required from CERN. This will be decided following consultation by the CERN directorate.**
- 5.4 The P326 proposal for the measurement of branching ration of  $K^+ \rightarrow \pi^+ \nu \bar{\nu}$  has an ongoing R&D programme that is strongly supported by the SPSC. The group has proposed to make a measurement of  $R_K = \Gamma(K \rightarrow e \nu) / \Gamma(K \rightarrow \mu \nu)$  from a longer run in 2007 [5]. **The Research Board approved the proposal from P326 for the measurement of  $R_K$  in 2007, subject to the availability of the resources required from CERN. This will be decided following consultation by the CERN directorate.**
- 5.5 P327 is a proposal to study electromagnetic processes in strong crystalline fields [6]. It plans to perform investigations of aspects of radiation from high energy electron and positron beams in single crystals and amorphous targets. **The experiment was recommended for approval by the SPSC, and this was endorsed by the Research Board.**

## **6. REPORT FROM THE INTC MEETING OF 15-16 FEBRUARY 2007**

- 6.1 M. Huyse discussed the meeting that had been held on 29 January between representatives of ISOLDE and GANIL to investigate common strategies for the development of ISOL (online isotope separation) facilities in Europe. He then reported on the last meeting of the INTC [2]. Concerning nTOF, the design and construction of the new spallation target is more involved than originally thought, and it will not be ready in 2007. Seven ISOLDE proposals were recommended for

approval, for a total of 130 shifts (out of 204 requested). They are listed in the following paragraphs.

- 6.2 **P162 Add.3** *Advanced Time-Delayed coincidence studies of  $^{31,32}\text{Mg}$  from the  $\beta$ -decays of  $^{31,32}\text{Na}$ : Addendum: Conversion Electron Study to Identify the Deformed  $0_2^+$  State in  $^{30}\text{Mg}$  via its  $E0$  Decay* [7] was **approved for 22 shifts**, and will continue to be known as IS414.
- 6.3 **P170 Add.2** *Coulomb excitation of neutron deficient Sn-isotopes using REX-ISOLDE: The case of even Cd isotopes and odd Sn isotopes* [8] was **approved for 22 shifts**, and will continue to be known as IS418.
- 6.4 **P193 Add.1** *Coulomb excitation of odd-mass and odd-odd Cu isotopes using REX-ISOLDE and Miniball* [9] was **approved for 15 shifts**, and will continue to be known as IS435.
- 6.5 **P196 Add.2** *Precision measurement of the half-life of the superallowed  $O^+ \rightarrow O^+$   $\beta$  decay of  $^{38}\text{Ca}$*  [10] was **approved for 18 shifts**, and will continue to be known as IS438.
- 6.6 **IS439** *Nuclear moments, spins and charge radii of copper isotopes from  $N=28$  to  $N=50$  by collinear fast-beam laser spectroscopy* [11] was **approved for a further 19 shifts**, and will continue to be known as IS439.
- 6.7 **P222** *Study of polonium isotopes ground state properties by simultaneous atomic- and nuclear-spectroscopy* [12] was **approved for 19 shifts**, and will be known as IS456.
- 6.8 **P224** *Laser spectroscopy of gallium isotopes using the ISCOOL RFQ cooler* [13] was **approved for 15 shifts**, and will be known as IS457.

## 7. ANY OTHER BUSINESS

- 7.1 The **next meeting** of the Research Board will be held on 6 June 2007.

**ENCLOSURES**

1. Draft Minutes of the 86<sup>th</sup> LHCC meeting held on 31 January-1 February 2007 (LHCC-2007-004/LHCC-86)  
<http://doc.cern.ch/archive/electronic/cern/preprints/lhcc/public/lhcc-2007-004.pdf>
2. Minutes of the 79th SPSC meeting held on 21-22 November 2006 (SPSC-2006-041/Rev. SPSC-079)  
<http://doc.cern.ch/archive/electronic/cern/preprints/spsc/public/spsc-2006-041.pdf>
3. Draft Minutes of the 80th SPSC meeting held on 6-7 February 2007 (SPSC-2007-010/SPSC-080)  
<http://doc.cern.ch/archive/electronic/cern/preprints/spsc/public/spsc-2007-010.pdf>
4. Draft Minutes of the 28th INTC meeting held on 15-16 February 2007 (INTC-2007-010/INTC-028)  
<http://doc.cern.ch/archive/electronic/cern/preprints/intc/public/intc-2007-010.pdf>
5. Memorandum – Auger/RE3 referee report

**REFERENCES**

- [1] Minutes of the 178<sup>th</sup> meeting of the Research Board (CERN/DG/RB 2006-377/M-178)
- [2] Copies of the transparencies are available from the agenda at:  
<http://indico.cern.ch/conferenceDisplay.py?confId=12185>
- [3] Memorandum – Auger/RE3 referee report, enclosed
- [4] LHCb Comprehensive Review Report (LHCC-2007-007/G-126)
- [5] NA48/2 and P-326 Status Report (CERN-SPSC-2006-033/M-749)
- [6] Electromagnetic processes in strong crystalline fields (CERN-SPSC-2005-030/P-327)
- [7] Advanced Time-Delayed coincidence studies of <sup>31,32</sup>Mg from the  $\beta$ -decays of <sup>31,32</sup>Na: Addendum: Conversion Electron Study to Identify the Deformed  $0_2^+$  State in <sup>30</sup>Mg via its E0 Decay (CERN-INTC-2007-006/P162 Add.3)
- [8] Coulomb excitation of neutron deficient Sn-isotopes using REX-ISOLDE: The case of even Cd isotopes and odd Sn isotopes (CERN-INTC-2006-037/P170 Add.2)
- [9] Coulomb excitation of odd-mass and odd-odd Cu isotopes using REX-ISOLDE and Miniball (CERN-INTC-2007-002/P-193 Add.1)
- [10] Precision measurement of the half-life of the superallowed  $O^+ \rightarrow O^+$   $\beta$  decay of <sup>38</sup>Ca (CERN-INTC-2007-004)
- [11] Nuclear moments, spins and charge radii of copper isotopes from N=28 to N=50 by collinear fast-beam laser spectroscopy (CERN-INTC-2007-007)

- [12] Study of polonium isotopes ground state properties by simultaneous atomic- and nuclear-spectroscopy (CERN-INTC-2007-003)
- [13] Laser spectroscopy of gallium isotopes using the ISCOOL RFQ cooler (CERN-INTC-2007-005)