

Short Minutes of the BVR 36

Meetings of February 9 – 11, 2005

1 Meetings of the Committee

closed meetings: Thursday, February 10, from 9:00 – 12:30

Friday, February 11, from 8:30 – 11:30

present: P. Cenci

C. Hoffman (chair)

S. Paul

R. Rosenfelder (secretary)

L. Tauscher

D. Wyler

excused: A. Blondel, D. Bryman, J. M. Pendlebury

local consultant: C. Petitjean

external consultant: A. Ceccucci

from the “Forschungskommission”: L. Simons

ex officio: R. Eichler (till 11:00 on Thursday, from 10:45 on Friday)

2 New Proposals

2.1 R-05-03.1: Measurement of the neutron electric dipole moment (K. Kirch, O. Naviliat-Cuncic *et al.*)

Recommendation:

The Committee supports the formation of the new collaboration to measure the neutron EDM with a goal of a (at least) ten-fold improvement over the present limit. They think that the two-phase approach (using the Sussex-RAL-ILL apparatus first at ILL before moving to PSI) makes a good deal of sense and recommends that the technical coordinator for the first phase should be at ILL. Considering the present stage of the proposal, the next review should take place one year from now. The Committee expects a new, detailed proposal before the experiment moves to PSI.

2.2 R-04-02.1: Measurement of the UCN production efficiency of solid D₂ and comparison with the solid cryogenic materials CD₄ and O₂ (K. Kirch *et al.*)

Recommendation: The Committee strongly supports this activity as it clearly enhances the experience of the participants with UCN and is useful for the UCN source development. They also note the many new original measurements and publications made by this group.

3 New Letters of Intent

3.1 R-05-01.0: Precise measurement of the $\pi^+ \rightarrow e^+\nu$ branching ratio (D. Pocanic *et al.*)

The Committee feels that this will be a very important but difficult experiment as a high-precision absolute measurement is required. To encourage the collaboration, it supports the requested beam time for tests. At the same time it notes that a full proposal will need a detailed description of possible systematic errors and of the available manpower.

3.2 R-05-02.0: Measurement of cold neutron depolarization in liquid and solid deuterium (M. Snow *et al.*)

The Committee considers this LOI as a feasibility study for possible future experiments on parity violation. Noting that the apparatus - especially the deuterium target for tests of UCN production - exists, the Committee endorses this “mini proposal” with the understanding that a future (full-fledged) experiment on parity-odd effects in the nd-system would require a separate proposal.

4 Progress Reports and Beam Requests

The Committee received 10 Progress Reports most of which were presented orally in the Thursday afternoon session.

R-96-04: Search for Time Reversal Violating Effects in the Decay of Free Neutrons (K. Bodek *et al.*)

The Committee is pleased with the idea to rotate the neutron spin to gain a better understanding of systematic errors, and the ongoing data analysis. The Committee encourages the collaboration to proceed with its plans for a final data run in 2006.

R-97-05: Precision Measurement of Singlet μp Capture in Hydrogen (P. Kammel, C. Petitjean *et al.*)

The Committee notes a great deal of careful work and is looking forward to a definitive measurement of the induced pseudoscalar constant.

R-98-01: Measurement of the Strong Interaction Width and Shift on the Ground State of Pionic Hydrogen (D. Gotta *et al.*)

The Committee is very impressed by the data and the thorough work that has been done to obtain a reliable, precise value for the width. Final data taking is expected this year and/or the beginning of 2006.

R-98-03: Lamb-shift in muonic Hydrogen (F. Kottmann *et al.*)

The Committee feels that the physics goals of this experiment are worthwhile and that an improved measurement of the proton charge radius would be of significant value to the atomic physics and metrology communities. While being impressed by the many technical achievements, it is disappointed by the lack of an observed resonance in the data taken in 2003. The Committee recommends that the proposed improved laser system be fully demonstrated to work through the entire system and that the management structure of the collaboration be strengthened before further beam time is allocated.

R-99-06: Precision Measurement of the μ^+ Lifetime (G_F) With the FAST Detector (J. Kirkby, M. Pohl *et al.*)

The Committee takes note of the successful commissioning of the detector and is pleased that a first round of physics data taking is planned for this year.

R-99-07: A Precision Measurement of the Positive Muon Lifetime Using a Pulsed Muon Beam and the μ Lan Detector (D. Hertzog, R. Carey *et al.*)

Good progress has been achieved although several important problems remain to be solved before data taking can begin in 2006.

R-02-02: Partial Muon Capture rates for Double Beta Decay (V. Egorov *et al.*)

The Committee notes that the collaboration has almost completed the proposed list of isotopes to be measured. This summer's run with gaseous ^{82}Kr is endorsed as it is well motivated by future 2β -decay projects. However, any additional measurements would need a new proposal.

R-03-01: High-accuracy measurement of the spin-dependent neutron scattering length of the deuteron (O. Zimmer *et al.*)

The Committee is impressed by the two-beam method implemented by the collaboration to suppress uncontrolled drifts and by the successful testing of the apparatus. It looks forward to the first physics results this year.

R-99-05: Search for $\mu^+ \rightarrow e^+\gamma$ (T. Mori, A. Baldini *et al.*)

A separate report written by the special Technical Review Committee details the progress and remaining problems in this challenging experiment.

R-00-03: The Ultra Cold Neutron facility (UCN) (M. Daum *et al.*)

The Committee notes significant progress along with a few minor delays in this important project. It congratulates the collaboration for the detailed investigations it has performed (e.g. of diamond-like carbon coated foils) which demonstrate that it has become an integral part of the UCN community.

The status of the MEG and the new nEDM experiment were presented in detail during a full-day session on Wednesday (February 9, 2005). See the special reports by the Technical Review Committee for MEG (A. Blondel, A. Ceccucci, P. Cenci, C. Hoffman) and for nEDM (D. Bryman, S. Paul, M. Pendlebury, L. Tauscher, D. Wyler).

5 Next Meeting

The next meeting (BV 37) is again scheduled as a 3-day meeting on Wednesday - Friday, February 15 - 17, 2006.

Another special review for the MEG experiment is planned for July 2005.

February 28, 2005

C. Hoffman, R. Rosenfelder