Short Minutes of the BVR 42
Meetings of February 17 – 18, 2011

1 Meetings of the Committee

closed meetings: Thursday, February 17, from 9:00 – 12:10
Friday, February 18, from 9:00 – 10:30

present: D. Bryman (on Thursday)
P. Cenci
G. Colangelo
B. Filippone
C. Hoffman (chair)
S. Paul
J. M. Pendlebury
M. Pohl
M. Ramsey-Musolf
M. Spira (secretary)
U. Straumann
St. Passagio
excused: A. Blondel

local consultant: C. Petitjean

ex officio: K. Clausen
K. Kirch

2 New Proposals

R-11-01.1: The Existence of Pion-Muon Decay Asymmetry (PMAX) (J. Conway *et al.*)

Experiments in the 1950's and 1960's initiated the speculation that pions carry a spin–1 component that could induce a left-right asymmetry in the pion decay $\pi^+ \to \mu^+\nu_\mu$. However, this speculation contradicts the spin–0 nature of the pion as established in numerous experiments. The Committee rejects the PMAX proposal. We do not believe that this experiment would achieve an interesting result. The proposal is not well motivated and quite rudimentary, i.e. lacking many details. Moreover the group did not convince the Committee, that they could do the measurement successfully.

3 Progress Reports and Beam Requests

The Committee received five Progress Reports, four of which were presented orally in the afternoon session on Thursday (February 17). In addition, one request for time to measure rates and backgrounds in the UCN area was received: the group making this request may submit a new proposal to PSI in the future.

The Committee thanks all speakers for their presentations which were very helpful and informative. It also acknowledges the written status report by the FAST collaboration which does not request further beam time.

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

There was a separate day of presentations of this experiment on Wednesday (February 16). A separate, more detailed, report will be prepared by the MEG subcommittee. The Committee notes that last year a tremendous amount of progress was achieved. However, the MEG experiment was plagued by several problems including an accident with the muon stopping target and a quench of the BTS magnet. Last year all experimental systems worked together for the first time. The collaboration solved their problems with the fibre counters and drift chambers and achieved relatively smooth operation of the experiment before the BTS quench. The Committee looks forward to the analysis of the 2010 data and the acquisition of an even larger data sample during 2011. The MEG collaboration intends to publish their results from the 2009 data with an excess of 3.5 events above background. Since the results will be of great interest by everybody in our community, the Committee recommends that this publication should be made with a very careful choice of words about the excess of events. The Committee suggests the use of different beam rates in 2011 to check if the excess is compatible with background events. Moreover, the Committee proposes the use of two blind boxes in the analysis instead of only one to avoid a re-blinding of the whole data set after unblinding, as was done with the 2009 data. The results obtained are obviously exciting and the Committee is looking forward to the results of the 2010 run and a constructive run in 2011. We strongly urge the PSI laboratory to work towards getting back to the normal standards of beam reliability.

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

The Committee is very pleased with the progress made by the group and is looking forward to the publications of the results from this experiment.

R-05-03: Measurement of the Neutron Electric Dipole Moment (P. Fierlinger, K. Kirch *et al.*)

There was a separate day of presentations of this experiment on Wednesday (February 16). This is a major project on which a separate report by the EDM subcommittee has been prepared. The Committee is convinced that continuing good progress is being made. The phase II detector is quite impressive and development of the next generation detector is on track. 2010 has been an exciting year for the UCN source (R-00-03) with the first operation achieved before Christmas. The collaboration expects 40–50 days of data taking this year and

hopes to extract a result for the electric dipole moment of the neutron that is competitive with the best results for this quantity so far.

R-07-01: A Precision Measurement of the Neutron Lifetime in a Trap with Superconducting Magnets (R. Picker *et al.*)

The Committee acknowledges the written report of the PENeLOPE collaboration which does not need beam time this year. The continuing problems with the magnet design have forced the collaboration to engage a new company for the construction of the coils. The group intends to come to PSI this year to make measurements with a simple prototype of their apparatus. Another two years are foreseen for the development of the final apparatus. The Committee is pleased with the progress made by the collaboration and looks forward to a successful measurement of this important quantity.

R-08-01: Muon Capture on the Deuteron - The MuSun Experiment (P. Kammel, C. Petitjean, A. Vasilyev *et al.*)

The Committee feels that this experiment is going quite well. The achievements of deuterium purity in this experiment are quite impressive. In this year the group is going to perform 12 weeks of measurements in the πE3 area before they have to vacate this area and move to the πE1 area. Measurements have shown that the quality of the πE1 beamline is well suited for MuSun. The πE1 area must be increased in size to accommodate this experiment; the Committee strongly urges PSI to do so.

4 Request for beam time to prepare a Letter of Intent

Measurement of the A asymmetry parameter in Neutron Decay (UCNA) (B. Filippone *et al.*)

The Committee thinks that this experiment, currently running at Los Alamos, is very interesting. It may benefit from the higher UCN flux at PSI. The group intends to come to PSI this summer to perform background and rate measurements. This experiment is capable to measure the A asymmetry parameter in neutron decay with a precision that allows an extraction of the first-generation mixing parameter V_{ud} of the Cabibbo-Kobayashi-Maskawa (CKM) matrix with similar accuracy as the present world average. This will allow a measurement of V_{ud} independent of the determination of the neutron lifetime in previous experiments which yielded conflicting results. While there is no formal letter of intent from this group, the Committee supports this activity at PSI.

5 Miscellaneous

R. Horisberger (Paul Scherrer Institut) gave an interesting Invited Talk on "The CMS Experiment at LHC, Status and Perspectives of PSI Activities" in the Open Users Meeting on Wednesday afternoon before the presentations of the experiments. These overviews have become a standard and very useful part of the Open Users Meetings.

6 Next Meeting

The next meeting (BV43) is again planned as a 3-day meeting, tentatively for Tuesday - Thursday, February 21 - 23, 2012. The first day will be devoted to reviews of the MEG and neutron EDM experiments.

The Committee notes that this was Patrizia Cenci's final meeting with us. We thank Patrizia for her many years of service and for her wise advice for the past several years.

March 2, 2011 C. Hoffman, M. Spira