



EUROPEAN LABORATORY FOR PARTICLE PHYSICS

CERN/SPSC 99-23
SPSC 44
23 September 1999

SPS AND PS EXPERIMENTS COMMITTEE

Decisions taken at the 44th meeting on 14 September 1999

OPEN SESSION:

1. Status report from WA95 (CHORUS) : P. Zucchelli
2. Status report from WA96 (NOMAD) : L. Camilleri
3. Search for $\nu_\mu \rightarrow \nu_e$ oscillation at the CERN PS (SPSC 99-26/P311): P. Loverre
4. ICANOE (Imaging and CALorimetric Neutrino Oscillation Experiment) - A proposal for a CERN-GS long baseline and atmospheric neutrino oscillation experiment (INFN/AE-99-17, CERN/SPSC 99-25/P314): C. Rubbia, G. Barbarino, A. Rubbia
5. OPERA (Progress Report) - A long baseline ν_τ appearance experiment in the CNGS beam from CERN to Gran Sasso (CERN/SPSC 99-20/M635, LNGS-LOI 19/99): A. Ereditato, M. Nakamura

CLOSED SESSION:

Present: P. Bagnaia, , W. Braunschweig, M. Cavalli-Sforza, S. Dalla Torre, A. De Roeck, Y. Déclais*, C. Détraz, R. Forty, G. Goggi, P. Grafström*, U. Heinz, K. Hübner, K.-H. Kissler, K. Königsmann (Chairman), W. Kühn, L. Maiani, J. May, N. Pavlopoulos*, M. Pennington, A. Pich, J.-P. Riunaud, L. Robertson (replacing M. Delfino), T. Ruf, D. Simon, J. Stachel, E. Tsesmelis (Secretary), C. Wagner, A. Zalewska.

* Part-time

Apologies: B. Koene, A. Magnon, M. Tyndel, D. Websdale.

1. INTRODUCTION

The Chairman presented apologies from four members of the Committee.

2. APPROVAL OF THE MINUTES

The minutes of the 43rd SPSC meeting (SPSC 99-17 / SPSC 43) were approved with the following amendment: *in point 7.2 (NA47) "...in the field of polarised targets. Moreover, the SL/EA group is commended for providing an excellent polarised beam."*

3. REPORT ON THE 141st MEETING OF THE RESEARCH BOARD

The Chairman of the SPSC reported on the status and results of several experiments - PS211, NA47, NA58, and I221. He also outlined the latest beam design improvements to the CNGS beam and presented the status of the accelerator complex.

4. STATUS REPORT ON THE SPS

The SPS has been running well. Typical SPS intensities for the latter part of the 1999 proton run are $2 \cdot 10^{13}$ protons per cycle. A high transmission, typically greater than 98% and resulting from the reduced intensities compared to previous years, has given rise to lower losses in the machine. The objective of improving the availability of the machine has been successfully met with the present value being 83%. The Committee acknowledges the excellent performance of the accelerator and extends its **congratulations** to the teams in the SPS and PS.

5. STATUS REPORT ON THE PS

The PS Complex fault rate for protons for SPS fixed target physics is 7% while that for protons to the East Hall is 7.4%.

The beam studies for the PS213 neutron time-of-flight facility are progressing well, with tests being presently made on single bunch extraction at 20 GeV/c using either a dedicated 1.2 s. cycle or a shared cycle with the slow extraction of 2.4 s. duration. The latter operation mode offers the advantage that it will not interfere with the other users of the PS beams.

Tests of the AD with protons were successfully carried out in July. The proton beam has been successfully cooled to 99 MeV/c with a lifetime of about 1 minute. The commissioning schedule of the AD with antiprotons has been revised. Antiprotons are now expected at the end of September, a four week delay compared to earlier schedules, and the first physics tests are not expected before the beginning of November.

6. STATUS REPORT ON THE SPS AND PS EXPERIMENTS

The Coordinator presented the status of the experiments. All users have so far successfully fulfilled their planned programme. NA48 reported a very efficient and stable data taking run for ϵ'/ϵ . NA57 collected reference data for their heavy ion run at 40 A GeV/c planned for the end of this year. Due to an accident with their hydrogen target, NA49 has changed their proton programme to p+Pb from p+p. Successful data taking was also reported at the CERN-EU Reference

Radiation Facility (CERF) used primarily to test and compare dosimetry instrumentation used at aviation altitudes. Following a successful commissioning, the M2 muon beam is again operational and NA58 was able to perform first detector tests in this beam.

At the PS Complex, the DIRAC experiment is steadily progressing with its data taking run for 1999. The ASACUSA experiment has started installing and testing components at the AD while the ATHENA set-up is currently under test with the installation being scheduled to commence in October.

The Coordinator also reported on the test beam activities at the SPS and PS of a number of space and satellite experiments – ACCESS, PAMELA, GLAST and AGILE.

7. DISCUSSION ON THE OPEN SESSION

7.1 WA95 (CHORUS) and WA96(NOMAD):

The Committee **congratulates** the collaborations for their impressive and careful search for $\nu_{\mu} \rightarrow \nu_{\tau}$ oscillation at the SPS. The oscillation analyses are progressing steadily and the large data samples and detailed reconstructions make numerous other physics topics also accessible. The two experiments have demonstrated that the two complementary methods have proven viable in the search for ν_{τ} appearance. The background tails in the kinematical selection as used by NOMAD can be controlled and great experience has been accumulated with the automatic emulsion scanning techniques developed by CHORUS. A sustained effort for a thorough analysis of all relevant physics channels is **encouraged**.

7.2 PROPOSAL SPSC 99-26 / P311:

The Committee recognises with interest the proposal of the short-baseline neutrino experiment P311 to address $\nu_{\mu} \rightarrow \nu_e$ oscillation in the region of the LSND result. Its use of the near/far detector technique makes it complementary in its approach to the MiniBooNE proposal at FNAL, which is also attempting to confirm the LSND result via ν_e appearance.

However, the Committee considers that P311 would most probably not be able to produce results before MiniBooNE because of the lower integrated proton flux at the PS and because of the very tight construction schedule. In view of the above, P311 is **not recommended** for approval.

7.3 ICANOE:

The Committee considers that the ICANOE detector has a large discovery potential to observe a ν_{τ} appearance signal resulting from $\nu_{\mu} \rightarrow \nu_{\tau}$ oscillation in the neutrino beam from CERN to Gran Sasso (CNGS), as well as being capable of investigating oscillations to ν_e . Moreover, the proposed detector has the potential of studying atmospheric neutrinos and proton decay.

The Committee requests a written report to the December 1999 session of the SPSC, providing details on the schedule with a list of milestones for the construction and running of the experiment, and including the experiment's funding and manpower profiles.

The Committee is impressed by the quality and amount of work presented and **encourages** the collaboration to continue their experimental design, emphasising further studies of integrating the ICARUS technique with a spectrometer and realising the T600 module in order to prove the viability of the ICARUS technique.

7.4 OPERA:

The Committee considers that the experiment has the potential to explore the parameter space of neutrino oscillation indicated by the Kamiokande and SuperKamiokande experiments. Using well-proven techniques and in a reasonable time, OPERA offers the possibility to observe a ν_τ appearance signal in the neutrino beam from CERN to Gran Sasso (CNGS) resulting from $\nu_\mu \rightarrow \nu_\tau$ oscillation.

In order to monitor the progress leading up to the submission of the proposal, the Committee requests a written report to the December 1999 session of the SPSC, providing details on the schedule with a list of milestones for the construction and running of the experiment, and including the experiment's funding and manpower profiles.

The Committee is impressed by the quality and amount of work presented and **encourages** the collaboration to continue their experimental design, emphasising further studies with test beams and simulations. A proposal is expected early in the year 2000.

8. STATUS OF THE NA58 (COMPASS) EXPERIMENT

The Committee acknowledges the quality and amount of work presented by the collaboration in response to information on schedules, funding, manpower, and the tracking detectors requested by the SPSC. The Committee considers that the progress shown is positive and the collaboration should be **encouraged** to continue their efforts to install and commission the experiment as detailed in their overall schedule.

9. SCHEDULES OF THE MACHINES

The Coordinator showed the updated schedules of the 1999 SPS and PS Fixed Target Programmes. He reported that a call for beam requests for next year has been sent to the SPS and PS user communities. He also showed the draft machine schedule of the SPS according to which 19 weeks are foreseen for protons from 2/5 to 10/9 followed by 5 weeks and 4 days for heavy ions from 25/9 to 3/11.

He also outlined the tests at the Lepton Pre-injector (LPI) at the PS Complex in 1999, mentioning potential scheduling conflicts at the end of the year. The main users of this irradiation facility are the LHC machine and CMS. As in 1998, the Coordinator will allocate the beam time subject to its compatibility with LEP operation and the overall PS Complex schedule.

10. ANY OTHER BUSINESS

The Committee recognises the interest of the NA53 experiment to accumulate data with the 40 A GeV/c Pb-ion beam in 1999 for the study of electromagnetic

dissociation of target nuclei by ^{208}Pb projectiles. The Committee **recommends** the allocation of beam time in parallel with the NA50 data taking and subject to its compatibility with the NA50 experimental set-up.

The Committee acknowledges the request by NA49 for a run with an 80 A GeV/c Pb beam during the 1999 SPS heavy ion run. However, due to the late notification, this request could not be discussed in detail and was deferred to the next meeting.

The 45th meeting will be held on **Wednesday, 1 December 1999**.

The provisional dates for the SPSC meetings in 2000 are:

25-26 January
28-29 March (revised)
23-24 May
5-6 September
31 October – 1 November

11. DOCUMENTS RECEIVED

Search for $\nu_{\mu} \rightarrow \nu_e$ oscillation at the CERN PS; CERN/SPSC/99-26/P311.

ICANOE: Imaging and CALorimetric Neutrino Oscillation Experiment. A proposal for a CERN-GS long baseline and atmospheric neutrino oscillation experiment. (INFN/AE-99-17); CERN/SPSC 99-25/P314.

OPERA: A long baseline ν_{τ} appearance experiment in the CNGS beam from CERN to Gran Sasso. CERN/SPSC 99-20/M635; (LNGS-LOI 19/99).

OPERA Collaboration (Progress report). CERN/SPSC 99-31/M638; (LNGS-LOI 19/99, Add.1).

The CERN Neutrino beam to Gran Sasso (NGS): Addendum to report CERN 98-02, INFN/AE-98/05; (CERN-SL/99-034 (DI), INFN/AE-99/05); CERN SPSC 99-19/M633.

Progress Report towards an Experiment to Study Atmospheric Neutrino Oscillations with a Massive Magnetized Iron Detector; (LNGS-LOI 20/99), CERN/SPSC 99-24/M636.

A solar axion search using a decommissioned LHC test magnet; CERN/SPSC 99-21/P312.

Request for 80 A.GeV Pb Beam in 1999 Heavy Ion Run; CERN/SPSC 99-30/P264 Add.4.

Addendum to P309 and request for beam time in 2000; CERN/SPSC 99-27/P309 Add.1.

Status of the COMPASS experiment; CERN/SPSC 99-18/M632.

Running the NA48 experiment during the year 2000; CERN/SPSC 99-22/M634.

Electromagnetic Dissociation of Au Targets by Relativistic Pb Projectiles;
CERN/SPSC 99-29/M637.

Status of DIRAC experiment after the run 21 June - 4 August 1999;
CERN/SPSC 99-32/M639.

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