



EUROPEAN LABORATORY FOR PARTICLES PHYSICS

CERN/SPSC 99-6
SPSC 41
5 February 1999

SPS AND PS EXPERIMENTS COMMITTEE

Decisions taken at the 41st meeting on 19-20 January 1999

OPEN SESSION on Tuesday, 19 January at 9.00 h., Main Auditorium.

1. Status report from NA49 : P. Seyboth
2. Status report from NA50 : L. Kluberg
3. Status report from NA53 : J.C. Hill
4. Status report from NA57 : F. Antinori
5. Experimental study of a positron source using channeling (SPSC 98-23/P309):
R. Chehab.

CLOSED SESSION

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

* Part-time

Apologies: G. Goggi, K. Jakobs, M. Pennington, A. Pich, M. Tyndel.

1. INTRODUCTION

The Chairman presented apologies from five members of the Committee. He welcomed the new members S. Dalla Torre, R. Forty, U. Heinz, W. Kühn, A. Magnon, N. Pavlopoulos, T. Ruf, and C. Wagner.

2. APPROVAL OF THE MINUTES

The minutes of the 40th meeting were approved without modification.

3. REPORT ON THE MEETING OF THE RESEARCH BOARD

The Research Board recognizes the importance of a programme on neutrino oscillations emphasizing the Δm^2 range indicated by the Kamiokande and SuperKamiokande experiments. It urges the Management to explore the feasibility to fund a programme based on a neutrino beam from CERN to Gran Sasso (NGS) and to encourage the development of one experimental proposal during 1999.

The Research Board also took note of the SPSC decision to encourage the community interested in exploiting the neutron TOF facility, as described in the Letter of Intent I220, to submit a proposal demonstrating the uniqueness of this facility. The possibility of this proposal being considered jointly by the SPSC and ISC was raised.

It also approved the recommended SPS and PS schedules for 1999 and extended its congratulations for the good start-up of the AD.

4. STATUS REPORT ON THE SPS

The Committee noted with satisfaction the record number of integrated Pb-ions delivered to the experiments during 1998. The value of about $1 \cdot 10^{14}$ Pb-ions was a significant increase from the $6 \cdot 10^{13}$ delivered in 1996, despite the number of critical days and faults towards the end of the 1998 run. The MD performed to provide a 40 A GeV/c Pb-ion beam was successful and such a beam was extracted to target, enabling experiments to record their first data under these conditions.

The Chairman communicated the appreciation of the NA52 spokesperson for the excellent run in 1998 and for the continuous support of the Committee.

5. STATUS REPORT ON THE PS

The commissioning of the AD is proceeding well, with beams of 3.5 GeV/c protons having been successfully decelerated down to 300 MeV/c. The plans for 1999 were agreed to with the users and foresee the resumption of the commissioning, first with protons and then with antiprotons, after the start-up of the other PS machines. Following the completion of the installation of the experiments in August, the antiproton beam will be extracted during September, allowing for the first physics run during October and November.

6. STATUS REPORT ON THE SPS AND PS EXPERIMENTS

The Coordinator reviewed the status of some of the experiments and tests which took data during 1998. Following the successful installation of the sub-detectors, including the first of the MSGCs, and the commissioning of the beam, DIRAC recorded 250 000 events with all detectors having been included in the DAQ. This enables the collaboration to obtain the geometrical parameters of the set-up and to calculate the detection probability of $\pi^+\pi^-$ atoms. AMS, a particle spectrometer mounted inside a permanent magnet and flown on the space shuttle in 1998, aims for a detailed measurement of the charged particle flux in space. The detector was successfully calibrated at the T9 beam line following its return to Earth. Once launched, the satellite experiment PAMELA will measure the antimatter component of cosmic rays. The collaboration investigated the spatial resolution of their silicon microstrip detector at the T11 beam line. Also at T11, a prototype of the proposed long-baseline neutrino experiment AQUA-RICH was used to study the dependence of the Cherenkov ring width as a function of the incoming particle momentum. CEC, a CERN-EU collaboration of 18 institutes using the CERN-European Reference Field facility (CERF) on the H6 beam line, continued their tests on various types of dosimeter instrumentation as well as testing prototypes of beam loss monitors for the LHC. A first test of a real-size ATLAS LAr Barrel module using electrons in H8 derived from the Pb-ion beam impinging on the T4 target provided useful information on the detector design prior to its mass production. All the teams were pleased with the performance of the accelerator complex.

7. DISCUSSION ON NEUTRINO EXPERIMENTS

The Committee recognizes with great interest the short-baseline and medium-baseline neutrino experiments I213, I216, I217, and P304. The SPSC believes that a major contribution could be made by this community in the study of neutrino oscillations by a short-term experiment at CERN addressing the LSND result in a direct and model-independent way.

To this aim, the SPSC considers the I216 experiment as the most promising approach to study the LSND result via ν_e appearance and encourages the interested community to continue developing their experimental design.

8. CONCLUSIONS FROM THE CHAMONIX HEAVY-ION WORKSHOP

The Committee heard a report summarizing the successful workshop held recently at Chamonix to discuss the status of CERN's heavy-ion programme. The most notable achievements during the past year have been analyses of new data from NA44, NA45, NA49, NA50, NA52, WA97 and WA98 confirming earlier results which support the view of a transition to the QGP state.

The outlook for the programme includes extending the NA50 and NA57 coverage to smaller E_T values, improving the NA45 mass resolution to identify the pair decay of the ω mesons and to improve the systematic errors of their e^+e^- spectrum. A run at 40 A GeV/c for NA45, NA49 and NA57 would be used to study the characteristics of hadron production and lepton pair continuum in a regime where the ratio of baryon density to energy density is increased by a factor of three compared to the higher SPS energies. The potential of measuring open charm is also noted.

9. DISCUSSION OF THE OPEN SESSION

9.1 NA45:

The Committee congratulates the collaboration on the successful upgrade of the detector and is pleased with the considerable progress in the analysis of the high statistics data taken in 1996 and with the production of a complete simulation of the experimental background. This data confirms the excess yield of e^+e^- pairs below the ρ resonance.

9.2 NA49:

The collaboration in 1998 successfully used the Pb-ion beam impinging on a Pb or C converter to produce and record low mass fragments and successfully took data with Pb-ion beams at 40 A GeV/c.

9.3 NA50:

The earlier evidence for an anomalous mechanism of J/ψ suppression has been confirmed by the analysis of the 1996 data. The 1998 run was successful and the analysis is underway. Due to the limited acceptance of the NA50 spectrometer when running with 40 A GeV/c Pb-ion beams, the collaboration requests to maximize the time at 158 A GeV/c in order to increase its statistics and improve on systematic effects.

9.4 NA53:

The collaboration had a successful run in 1998 with the aim of studying the electromagnetic dissociation of target nuclei by ^{208}Pb projectiles. The Committee takes note of the interest to run at 40 A GeV/c in 1999, which would complete the data-taking phase of this experiment. Beam time would be allocated subject to a satisfactory analysis of the 1998 data and to its compatibility with the NA50 experimental set-up.

9.5 NA57:

The experiment had a first successful run with Pb-ion beams in 1998, collecting data at 158 A GeV/c and at 40 A GeV/c. The data at high energy is similar in quantity to that accumulated by WA97 and is being used to search for a signature of the QGP via strangeness production. Finally, the Committee notes the difficulties to complete the pixel multiplicity detector, owing to delays in industrial wafer production.

9.6 Low energy period:

The experiments NA45, NA49, NA53 and NA57 requested a run at 40 A GeV/c in 1999. The SPSC recalled that such conditions are an integral part of the Pb-ion programme to explore various baryon and energy densities. In view of the requests from the experiments and also of the successful low energy MD at the end of 1998, the Committee supports this request and recommends that the entire 1999 Pb-ion run be at 40 A GeV/c. The Committee also expressed its support for a run at 158 A GeV/c in 2000.

9.7 P309:

The Committee recognizes the interest of an experimental study of a positron source using channeling which might later lead to its application at linear colliders. It encourages the collaboration to continue developing its experimental design and to submit to the Committee an optimized measurement programme together with the results of Monte Carlo simulations of the positron reconstruction efficiency.

10. SCHEDULES OF THE MACHINES

The Coordinator showed the schedules of the 1999 SPS and PS Fixed Target Programmes, together with statistics showing that LHC test beam activities are dominating the beam time allocation. The schedules were **endorsed** by the Committee. He also summarized the variety of irradiation facilities at CERN including the Gamma Irradiation Facility (GIF) and the CERN-EU Reference Field (CERF) at the SPS, proton and neutron facilities at the PS East Hall, and the LEP Pre-injector (LPI).

11. ANY OTHER BUSINESS

The Chairman would like to extend his warm thanks to Daniel Drijard for the excellent work and dedication in his capacity as Secretary of the SPSC during the past 8 years.

The 42nd meeting will be held on **Tuesday 30 and Wednesday 31 March 1999.**

The 43rd meeting will be held on **Tuesday 25 and Wednesday 26 May 1999.**

12. DOCUMENTS RECEIVED

Addendum 3 to proposal SPSLC/P264: Status and Future Programme of the NA49 Experiment (CERN/SPSC 99-4/SPSC P264 Add.3).

Memorandum from the I216 Collaboration: Oscillation search with the PS neutrino beam (CERN/SPSC 99-1/M627).

Memorandum from the I217 Collaboration: I217 Update (CERN/SPSC 99-5/M628).

List of Members 1999 (CERN/SPSC 99-3/G13).

Emmanuel Tsesmelis