

CERN/SPSC 2000-045  
SPSC 50  
16 November 2000

## SPS AND PS EXPERIMENTS COMMITTEE

Decisions taken at the 50th meeting held on 31 October, 2000

### OPEN SESSION

1. Status report on PS 214 / HARP (SPSC 2000-029 / M656) L. Linssen.
2. Addenda to NA49 for running with hadron beams (SPSC 2000-011/P264 Add. 5, SPSC 2000-033/P264 Add. 6) H.G. Fischer.  
Addenda to NA49 for running with ion beams (SPSC 2000-035/P264 Add. 7, SPSC 2000-039/P264 Add. 8) M. Gazdzicki.
3.  $\bar{p}$ -nucleus Interactions at Low Energies with Streamer Chamber at AD (SPSC 2000-037/P319) E. Lodi-Rizzini.

### CLOSED SESSION

Present: F. Bobisut, W. Braunschweig, M. Cavalli-Sforza, S. Dalla Torre, Y. Déclais, J-P. Delahaye, C. Détraz, R. Forty, G. Goggi, P. Grafström, U. Heinz, J. Knobloch, B. Koene, K. Königsmann (Chairman), W. Kühn, A. Magnon, S. Myers\*, N. Pavlopoulos, M. Pennington, J-P. Riunaud, T. Ruf, H. Taureg (secretary), D. Websdale, A. Zalewska.

\* part time

Apologies: A. De Roeck, A. Pich

#### 1. APPROVAL OF THE MINUTES OF THE LAST MEETING

The minutes of the 49<sup>th</sup> meeting were approved without amendments.

#### 2. REPORT FROM THE 148<sup>TH</sup> MEETING OF THE RESEARCH BOARD

The Chairman reported on the 148<sup>th</sup> meeting of the Research Board. Most of the Meeting was taken up by discussions on the prolongation of LEP running. The Research Board **approved** the 80 A GeV run for NA49 and P318/OPERA. C. Détraz explained that OPERA has to pass further steps before full approval by INFN and CERN. The PS and SPS fixed target programme will be discussed in the forthcoming meeting.

### 3. SPS STATUS

P. Grafström summarized the status of the SPS. The efficiency of the machine has been remarkable during the heavy ion run, close to 90%. The delivered intensity has surpassed all previous years.

C. Détraz **thanked** the accelerator divisions for their effort and flexibility in delivering the 80 A GeV run for NA49 already during the setting up period.

### 4. PS STATUS

J-P. Riunaud reported on the status of the PS. Efficiency and intensity for the heavy ion run has been very good. In parallel the East hall received protons for DIRAC and tests. The AD operates with an improved cycle time and an antiproton intensity almost twice the design value. The RFQ-D for ASACUSA has been installed and successfully tested. RF interference with ATRAP has to be checked. The shut down will see major interventions to repair the vacuum leak on the kicker and possibly repair of some quadrupole coils.

The Committee **congratulates** the AD, PS and SPS for the successful and efficient operation of the accelerators this year.

### 5. STATUS OF THE EXPERIMENTS

T. Ruf reviewed the status of the experiments.

At the SPS, the heavy ion community is very satisfied with the efficiency of the machines and the intensity of the beams.

NA45 had a quick start up and used some of the 80 A GeV run for data taking. The detector worked well. Some time was lost with a problem of the magnet.

NA49 worked very well. The 80 A GeV data could be taken in additional time.

NA50 operated with the target in vacuum to reduce background. The detector worked fine.

NA57 had an efficient start up and performed well.

At the PS, DIRAC profited from more protons on target and a good efficiency of the detector. The collaboration acknowledges the help from the accelerator team.

At the AD, the experiments complete their detectors and take data.

### 6. DISCUSSION ON HARP

The referee recalled the physics aim of the experiment, the set up and time scale. An impressive amount of work has been done in a short time to be ready for the technical run.

Not all components were available or complete for the technical run. Problems with the drift chamber readout were encountered during the run. The schedule for the TPC is very tight. The collaboration has increased in size, is very motivated and has an ambitious programme for the available time frame.

The Committee **congratulates** the collaboration on the impressive progress with the installation of the detector and the achievements of the technical run. The Committee anticipates a successful data taking in 2001.

## 7. DISCUSSION ON THE ADDENDA OF NA49

U. Heinz commented on the hadron and ion programme. He stressed that a comparison of pp, pA and AA data is needed for a thorough understanding of the AA data. But all these data have to be analyzed within the same framework. Furthermore, only at the SPS one can explore the transition region between 20 and 100 A GeV. The data from the SPS are important for the interpretation at higher energies like at RHIC and LHC.

The referee reported on the NA49 programme with hadron beams. The data will allow a separation of projectile and target contributions to the particle production. The data will be important as a reference measurement for heavy ion data. The present setup is very well suited for the measurements.

The Committee **recommends** for approval four weeks of data taking with hadron beams in 2001 provided implications for CMS can be minimized. The Committee looks forward to a more refined analysis of existing NA49 data and the 2001 data in view of a better interpretation of heavy ion data.

The referee summarized the proposed ion run of NA49. The structure observed at 40 A GeV in the variation with energy of strangeness production is unexpected and unexplained. The already taken 80 A GeV data and the two proposed data points at 20 and 30 A GeV should pin-point this structure. These measurements can only be done at the SPS.

In view of the results from the 40 A GeV ion run, the Committee **recommends** for approval the 20 and 30 A GeV ion runs for a combined beam time of 10 days as soon as possible. The Committee eagerly awaits the results from the 80 A GeV ion run.

## 8. DISCUSSION ON DIRAC

Following some reservations voiced concerning atomic physics calculations for the DIRAC experiment the referee has received independent advice and assurances that the uncertainties for the ionization probability of  $\pi$ - $\pi$  atoms, stated by DIRAC, are reasonable.

The referee recalled that DIRAC has been approved till the end of 2002 for the lifetime measurement of  $\pi\pi$  atoms. Data taking for the  $\pi K$  feasibility study has to be separated from the data taking for the approved programme and should therefore only start in 2003. A decision on the  $\pi K$  feasibility study is required soon so that funds for the new detector systems can be requested.

The Committee **recommends** for approval a run in 2003 to observe  $\pi K$  atoms and demonstrate the feasibility of the  $\pi K$  programme with the envisaged number of protons on target.

## 9. DISCUSSION ON STRAD

The referee explained the aim of the proposal, the envisaged technique for the measurements and the resources necessary. More detailed information will be required on various topics for a thorough appraisal of the proposal.

The Committee **agreed** to seek further advice on the physics case before any consideration of the proposal.

## 10. DISCUSSION ON CLOUD

The Committee appreciated the additional information supplied. The Committee **agreed** that a body more familiar with the research proposed by the Collaboration than the SPSC should scrutinize the scientific merits of the proposed facility. The Collaboration should seek contacts with and funding from organizations and agencies normally supporting atmospheric, meteorological and environmental research. These organizations may then seek an agreement with CERN on a CLOUD like facility at CERN if they deem CERN the right place for such a facility.

## 11. DISCUSSION ON OPERA

The Committee heard explanations why the DONUT experiment observed far less events than expected in the proposal. The Committee **concluded** that the expected performance of OPERA is not affected by the problems of DONUT, e.g. fewer protons on target etc. The Committee **agreed** that the performance of OPERA has to be monitored carefully.

The CERN referees presented a list of milestones for the experiment. This list presents a large overlap with a list established by the LNGSC which has been published. The Committee expressed its wish that a common list of milestones be established. It charged the Chairman to contact the chairperson of the LNGSC in order to achieve this goal and establish procedures for the collaboration of the two committees.

The Committee **took note** of the milestones for OPERA.

## 12. DISCUSSION ON NUVEL AND WANF

The Chairman summarized the aim of the Letter of Intent from the NUVEL collaboration which wants to search for deviations of the neutrino velocity from the velocity of light and improve existing limits.

K. Hübner stated that the West Area Neutrino Facility WANF has been partially dismantled and components are earmarked for reuse in the CNGS beam and by the LHCb experiment.

Given the modest increase in sensitivity expected from the experiment and the unavailability of WANF the Committee **can not support** the Letter of Intent I223 by the NUVEL Collaboration.

## 13. DISCUSSION ON MINOS

The MINOS experiment will search for neutrino oscillations in a long baseline experiment at Fermilab. British groups are involved in the energy calibration system for the near and far detectors. They want to validate the system with a test module in runs over the next three years at CERN for a number of organizational and financial reasons.

The Committee **recommends** for approval beam time in 2001 for the MINOS calibration in the T11 beam line.

14. DISCUSSION ON WA103

The referee recalled the motivation of the experiment, positron production via channeling. Enhanced production of photons and electron-positron pairs has been observed but the full reconstruction of the data is still under way. The Collaboration wants to study different targets and investigate an observed energy dependence in 2001.

The Committee appreciates the first physics results from WA103. The Committee **will consider** the addenda to WA103 only after all existing WA103 data have been fully analyzed including a complete drift chamber reconstruction.

15. SPS AND PS SCHEDULES FOR 2001

T. Ruf commented on the PS and SPS schedule for 2001. Most beam requests have been received. He will work on the detailed planning when the decision on LEP running is known. At the PS test beam time with  $p > 3.5$  GeV/c is in big demand. At the SPS there are conflicting interests to be resolved between NA50/NA60 and NA48, CMS and NA49, and CMS and NA57.

16. DOCUMENTS RECEIVED

Status report of the HARP experiment (SPSC 2000-029/M656).

HARP: Use of the NA49 apparatus for the HARP3 initiative (SPSC 2000-043/M658).

Proposal for PS test beam time for the MINOS calibration module (SPSC 2000-046/M659).

$\bar{p}$ -nucleus Interactions at low energies with a streamer chamber at AD (SPSC 2000-037/P319).

Additional information concerning the future NA49 programme on nucleus-nucleus collisions at low SPS energies (SPSC 2000-039/P264 Add. 8).

Measurement of neutrino velocities in short baseline experiment using bare target neutrino beams (SPSC 2000-040/I223).

CLOUD: An atmospheric research facility at CERN (SPSC 2000-041/P317 Add.2).

Letter from DIRAC (SPSC 2000-042).

Addendum to P309 and request for beam time in 2001 (SPSC 2000-044/P309 Add.2).

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