

19 February 1987

## STATUS OF THE PS FLYING-WIRE SCANNER

### Minutes of the meeting held on 18 February 1987

#### Abstract of the Invitation

The purpose of this meeting is primarily to promote a discussion on the future of the PS flying-wire scanner. The current status of the device will be reviewed briefly in terms of the results of some preliminary studies conducted towards the end of last year. Comments are invited on the conclusions to be drawn from these studies.

#### Present

V. Agoritsas, J.P. Bovigny, E. Brouzet, R. Cappi, S. Hancock, H. Koziol, J.P. Riunaud, M. van Rooij, C. Steinbach.

#### Minutes of the Meeting

C. Steinbach opened the meeting with a summary of the current status and principles of operation of the flying-wire scanners installed in the PS (straight sections 18 and 89). The status of the so-called SPS flying-wire scanner (straight section 34) was queried and it was pointed out that this device has been returned to the SPS-ABM group.

Concern was expressed about the mechanical aspects of the movement of the wire. Is the motion linear? What about oscillations of the wire itself? These questions were answered with reference to laboratory tests of the movement using a laser and by noting that there is no acceleration of the wire during data-taking and that, anyway, the frequency of any oscillations should be low. However, doubt continued to be expressed. Why not use a digital transducer to measure the position of the wire instead of a potentiometer? It was pointed out that a digital system employing optical techniques (as in the SPS micron scanner) would be unsuitable in the PS environment because of the sensitivity of photodiodes to radiation.

An explanation was then demanded for the asymmetry of many of the profiles taken in the PS - a long trailing tail is often observed, even on a vertical scan. Could this be due to a variation of the sensitivity of the device as a function of the position of the wire as it crosses the beam? This explanation was dismissed because the wire-to-

scintillator distance is some fifteen centimetres whereas the width of the beam is typically only a few millimetres.

Why not use the SPS set-up in its entirety? Although not fully investigated, this suggestion was not thought practicable because of the differing environments in the SPS and the PS. It is not possible, for example, to have electronic equipment situated close to the wire in the PS. Indeed, it was remarked that one of the early problems in the PS was the background induced directly from the dynodes inside the photomultiplier itself.

S. Hancock presented the results of some studies conducted using an updating discriminator inserted in the data-acquisition electronics chain. Although it was admitted that these were open to interpretation, it was claimed that they suggested that the origin of the observed non-linearity of the PS flying-wire scanner lay with its scintillator-photomultiplier combination. It was noted that similar effects had been seen with monitors in the PSB and that these had been identified as being due to a persistence problem with the PM's employed there. V. Agoritsas insisted that he had never seen persistence in a PM without the onset of drastic saturation. It was disputed whether persistence in a PM was attributable to the dynodes or solely the photocathode.

It was regretted that the PS schedule before Christmas and the untimely demise of both flying wires had precluded a direct comparison between the existing 12-dynode PM's and a 6-dynode one borrowed from the SPS group. It was noted that the moveable internal targets in the PS would provide the only feasible reference measurement by which to interpret such a comparison.

Concluding remarks included the observation that, of the two modes of operation of a photomultiplier - pulse detection and proportional mode, the only experience of the latter gained at CERN derives from flying-wire scanners. This view rather overlooks high-energy particle calorimetry. It was also remarked that the proceedings of the meeting had underlined the need for much more collaboration between the PS and the SPS flying-wire groups.

To close the meeting, H. Koziol outlined the action to be taken before the start-up of the PS:

- 1) Maximize contact with the SPS flying-wire people, including their users.
- 2) Borrow two 6-dynode Philips PM's for direct comparison with our own.
- 3) Investigate the availability of the Philips PM (or an equivalent) with a view to placing a combined order with the SPS group.

V. Agoritsas promised to make funds available for the purchase of photomultipliers should a supplier be found.

S. Hancock /PS

## Distribution

V. Agoritsas /PS  
Y. Baconnier /PS  
J. Boillot /PS  
M. Boutheon /PS  
J.P. Bovigny /PS  
E. Brouzet /PS  
R. Cappi /PS  
L. Henny /PS  
H. Koziol /PS  
J.P. Potier /PS  
T Risselada /PS  
J.P. Riunaud /PS  
M. van Rooij /PS  
C. Steinbach /PS