EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

CERN/ISRC/70-26/Add.1
19 January, 1971

To : Members of the ISRC

From : Working party on luminosity and background measurements in I-4

A. ORGANIZATION

The Working party has been organized as follows:

Counters	Chambers
K. Potter (in charge)	L. Massonnet (in charge)
V. Agoritsas	G. Coignet
G. Barbielini	H. Zaccone
B. Bosnjakovic	M. Minard
M. Bott-Bodenhausen	
H. Watson (installation).	

The two groups are presently preparing the equipment and will carry out the measurements. The starting date for the chambers group is not yet fixed.

In addition, discussions have taken place at regular intervals in which F. Heyman, T. Del Prete, L. Di Lella, A. Minten, W. Schmidt-Parzefall, J.C. Sens, K. Winter and M. Vivargent have also participated. The idea of these meetings is to discuss the preparation, to decide on what and how to measure, to discuss the data obtained, to gather information from the ISR groups, as to what equipment they would like to test and what background data they would require at an early date and in general to ensure that the groups which will start their own experiments later in the year benefit as much as possible from the experience gained now by the two groups above in running at the new machine.

The meetings are called by the ISR co-ordinator, who is also responsible for communications with the ISR control room. B. de Raad is the responsible person in the ISR division.

All groups have agreed to participate, except the CERN/Rome group who are doing measurements in I-5.

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B. PLAN FOR MEASUREMENTS

The plan for the measurements outlined in ISRC/70-26 is unchanged with the exception that for the beam height measurement two counter hodoscopes are being built; this is because the chambers originally intended for this measurement are presently being tested at Saclay and will be available only later.

The proposed arrangement of hodoscopes H_1 and H_2 is shown in Fig. 1. Both hodoscopes consist of 7 elements each 6 x 300 mm overlapping in such a way that they give 11 bins 2 mm high with two 4 mm bins at the outer edges. Coincidences between corresponding elements of each hodoscope are taken to give a mean resolution of ± 3 mm, vertically. This includes multiple scattering of particles with a mean momentum of 1 GeV/c. The profile is taken using one metre of beam with a total counting rate of about one per second (20 amp, 10^{-10} torr H_2). If H_1 is moved so that secondaries at larger angles are accepted ($\theta \sim 750$ mr) the resolution can be improved to ± 2 mm but the counting rate will fall to 0.15 counts/sec. A degraded vacuum would then be necessary to obtain a usable rate.

A liquid Cerenkov counter will be used to impose a cut on $\beta (\beta < 0.8)$ in order to eliminate low momentum particles which will be scattered so badly as to give an almost uniform background. This cut will remove 5% of the particles emerging at 350 mrad and 20% at 750 mrad.

For the first measurements we intend to install the two hodoscopes near beam $\neq 1$ ~7 m downstream of I-4. For monitoring 2 pairs of 10 x 10 cm counters will be installed up and downstream of I-4.

Our aim is to be ready for the ISR run of 22 January, from 18.00 to 24.00 hours.

J.C. Sens

Plan view of Counter Hodoscopes to Measure the Vertical Beam Profile

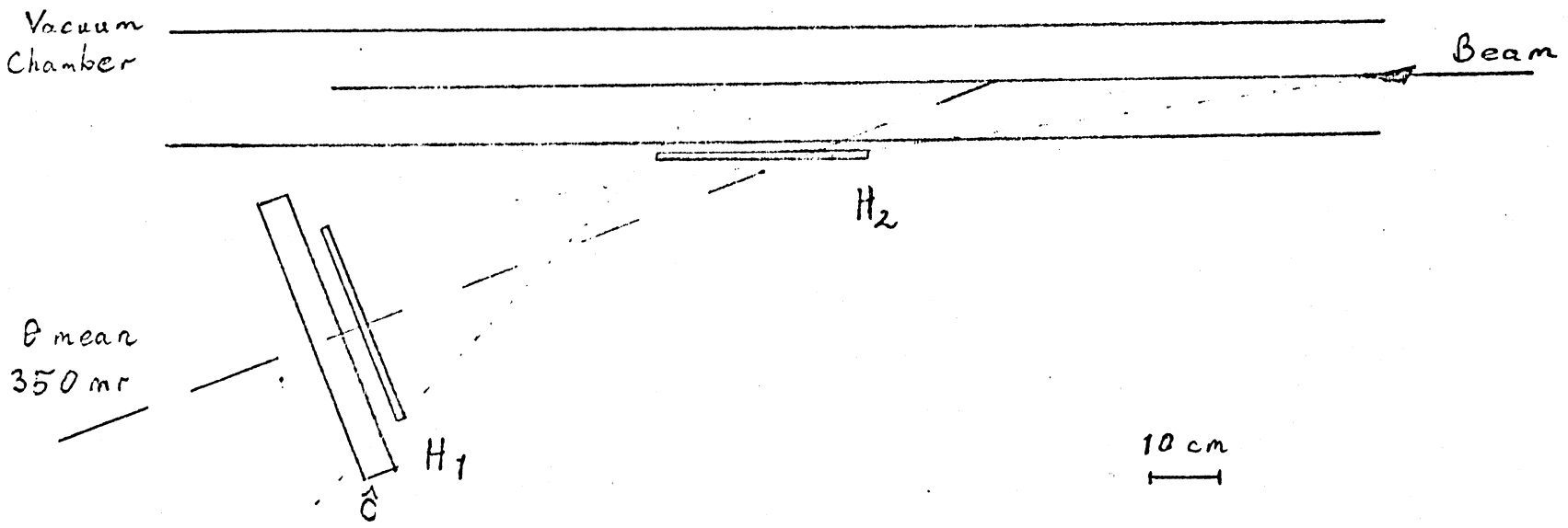

FIG 1.