

CERN LIBRARIES, GENEVA



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INTERSECTING STORAGE RINGS COMMITTEE

PROPOSAL FOR AN EXPERIMENT ON SINGLE DIFFRACTIVE PRODUCTION

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We would like to perform the experiment on single diffractive production discussed by P. Strolin in a recent letter of intent to ISRC (CERN-ISRC/74-9).

This experiment would run at the same time as R804, and would be arranged according to the scheme shown in Fig. 1. The Genoa-Harvard-MIT group of experiment R804 has no objections to this proposal. Counters of hodoscope H2L between D1 and D2 will be removed in order to reduce the multiple scattering of the detected proton. No other modification to the detector will be needed.

We summarize the features which are unique to this experiment:

- 1) The differential cross-section of diffractive events will be measured down to $\theta \sim 8$ mrad. For equal beam energies, this corresponds to $|t| \sim 0.01$ and $|t| \sim 0.04$ (GeV/c)² at 11 and 31 GeV/c, respectively. A large fraction of the diffractive cross-section will therefore be accessible for measurement. Assuming an exponential t -behaviour with slope $b \sim 7$ GeV⁻², about 65% of the cross-section will be found at > 8 mrad at $p_{ISR} = p_D = 31$ GeV/c. This will allow an adequate measurement of $d\sigma/dt$ and of σ_{tot} .
- 2) For each event, the charged particles produced in association with the proton in the spectrometer will be detected over nearly 4π solid angle, and their angles will be measured.

Since the missing-mass resolution of the spectrometer will be of the order of 1 GeV for masses of a few GeV, the mass-dependence of the properties of the fragmentation product -- multiplicity distribution, rapidity distribution, internal correlations, etc. -- will be measured. These properties are being studied in the present Pisa-Stony Brook experiment which, however, is limited just because it does not give information on the missing-mass.

We ask that the spectrometer magnet be provided by CERN.

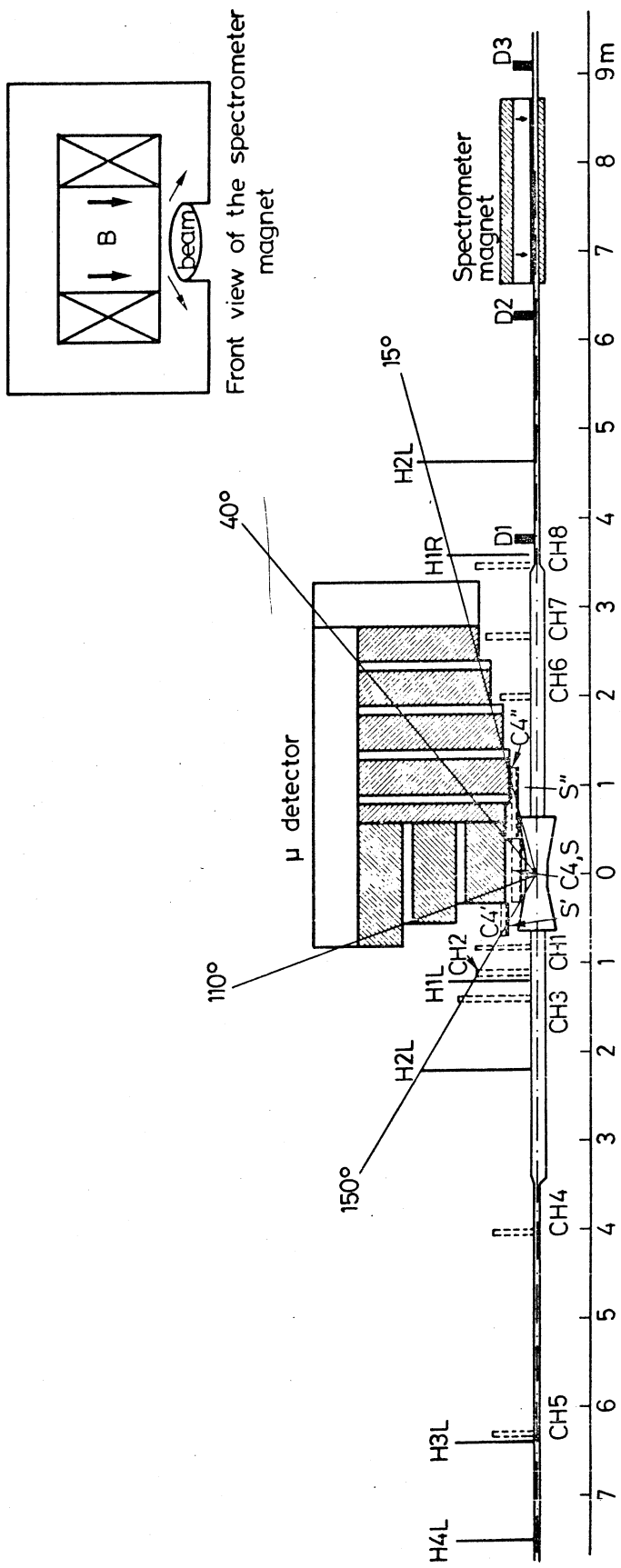


FIG.1