EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

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PROPOSAL

MEASUREMENT OF THE $\bar{p}p$ TOTAL CROSS SECTION AT THE CERN ISR

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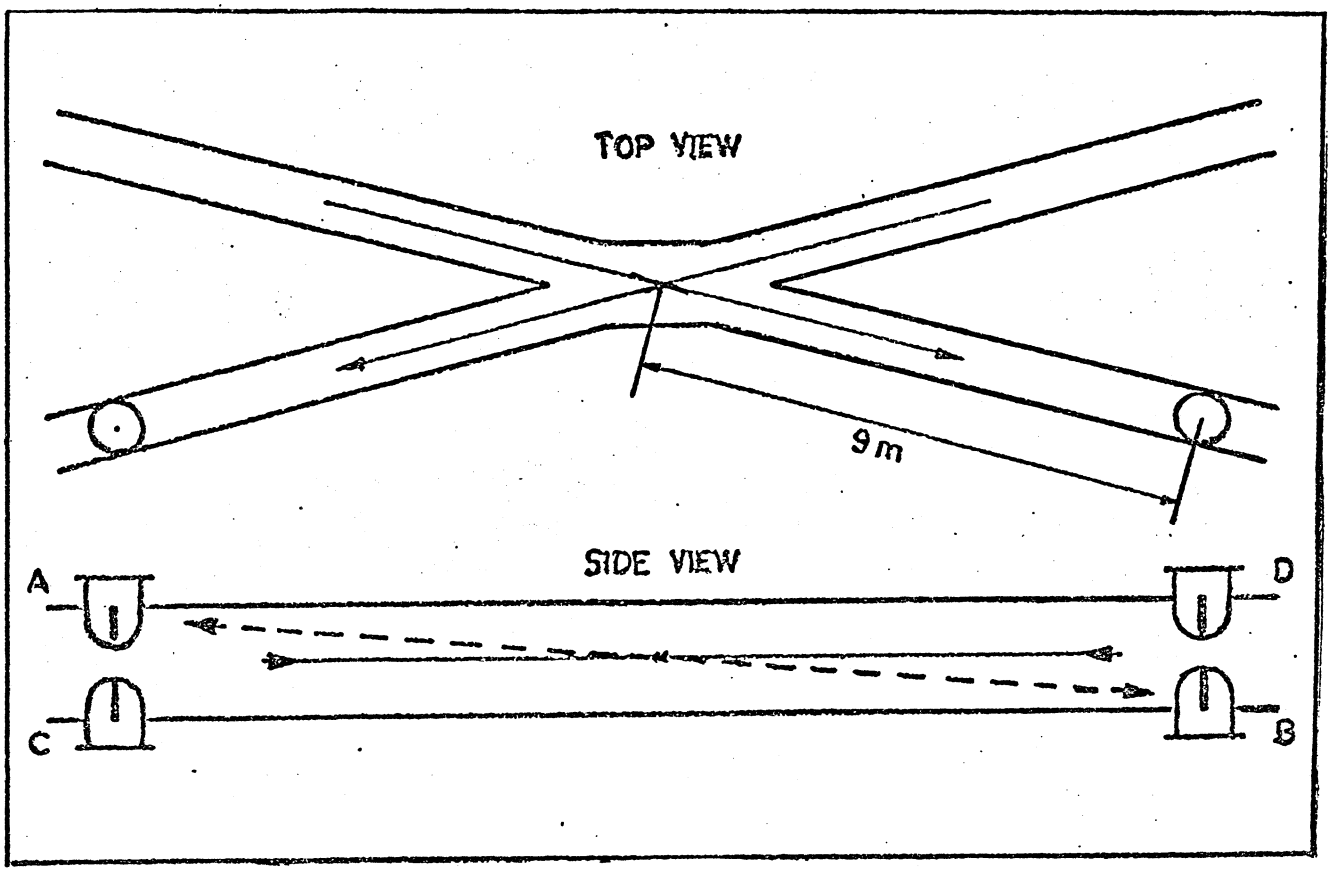
An experiment is proposed to measure the total $\bar{p}p$ cross section through the ISR energy range and compare the results with the total pp cross section measured at the same energies, with the same apparatus at close intervals in time. The method will be by a measurement of small angle elastic scattering and application of the optical theorem as used by the CERN-Rome collaboration to measure the total pp cross section (experiments R 601 and R 805). The expected precision on $\sigma_{TOT}(\bar{p}p)$ will be $\lesssim$ 1%. The quantities to be measured are the low-t slope of the differential elastic scattering cross section, σ_{TOT} and the ratio ρ of the real to the imaginary amplitude at t=0.

The original CERN-Rome apparatus of two special re-entrant vacuum chambers (so called 'Roman Pots') and four scintillation counter hodoscopes (ABCD in figure) will be used.


TOP VIEW
9 m
SIDE VIEW
A
D
C
B