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SUMMARY

STUDY OF HIGH-ENERGY NUCLEUS-NUCLEUS INTERACTIONS
WITH THE ENLARGED NA10 DIMUON SPECTROMETER

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We propose to study dimuon production in $^{16}\text{O}-^{238}\text{U}$ collisions at the maximum expected luminosity (2×10^7 interactions per pulse), using the NA10 spectrometer to which we add beam counters, an active segmented target and an electromagnetic calorimeter. Thermal dimuons are expected to be emitted from a quark-gluon plasma at a reasonable rate in the 1-3 GeV/c² transverse mass range, and to differ from ordinary dimuons by their p_T and rapidity distribution. The correlations of the dimuon variables with charged multiplicity and neutral energy flow distributions will be studied event by event. The energy density is estimated directly from the transverse neutral energy. Prior to the oxygen runs, $p-^{238}\text{U}$ collisions will be studied in the same apparatus with the twofold purpose of optimizing the layout and of establishing a data base suitable for extrapolation to $^{16}\text{O}-^{238}\text{U}$ collisions, deviations from which will then signal collective effects.

A fraction of the data will be taken with lighter targets, in order to extend the Drell-Yan systematics to nucleus-nucleus reactions. The apparatus is able to make full use of any (heavier) ion beam of comparable product $z \times$ particle flux.

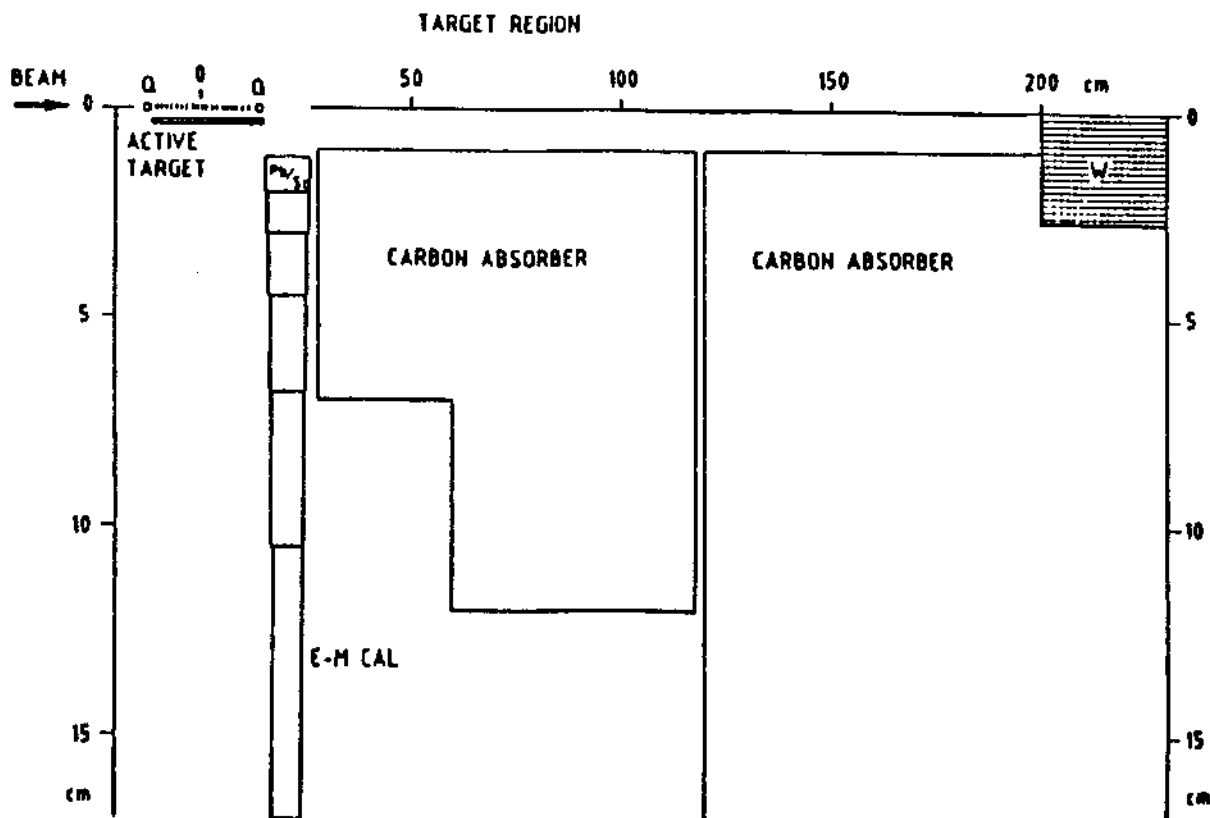
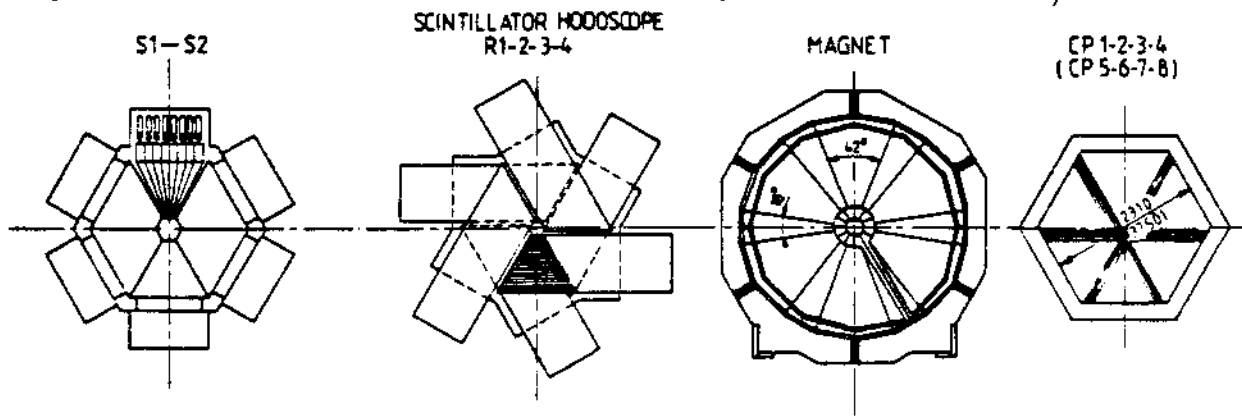
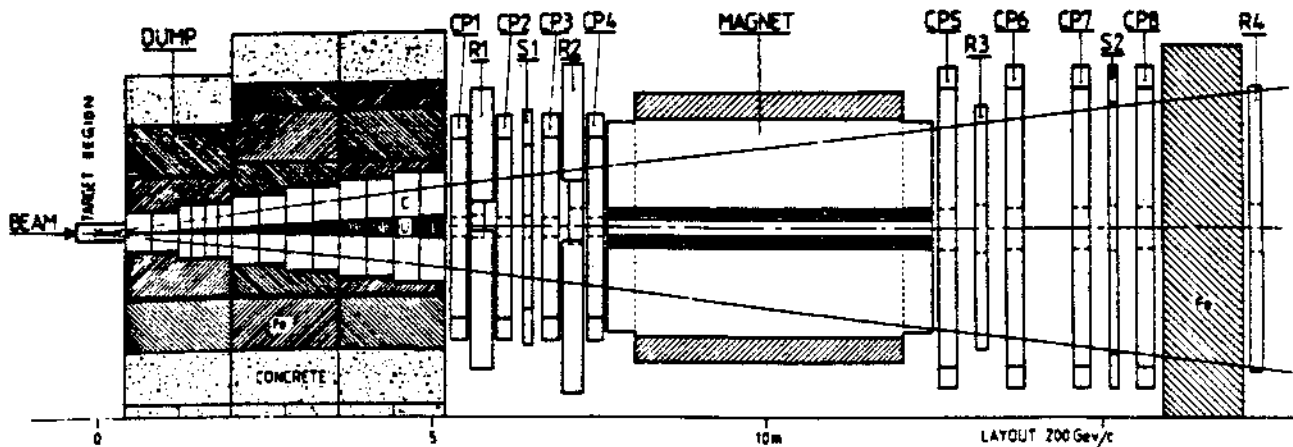


Fig. 1 The proposed layout: the NA10 spectrometer (top), front view of its main components (middle), target region (bottom -- note scale! Q = quartz, Pb/Sc are Pb and scintillating fibre structures).