Study of relativistic nucleus-nucleus reactions induced by ^{16}O beams of 9-13 GeV per nucleon at the CERN PS

Proposal submitted to the CERN PSCC by the

GSI-LBL-Heidelberg-Marburg-Warsaw-Collaboration

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Abstract

We propose to study the target fragmentation modes and $\pi^{\pm}$, K^0, Λ, $\bar{p}$ and $\bar{\Lambda}$ production in collisions of ^{16}O with target nuclei ranging from ^{40}Ca to ^{206}Pb. The acceleration of ^{16}O in the PS will be facilitated by a high charge state ion source installed by us at the Linac I. Experimental equipment will be the Plastic Ball spectrometer, currently employed by us at the Bevalac, LBL Berkeley, and the streamer chamber of the MPI-München group, presently used at the SPS inside a CERN Vertex magnet. The experiments require the acceleration of 10^7 oxygen ions per PS cycle and two splits in the East Hall external beam system delivering about 10^5 ions/s to the streamer chamber and the main part of the intensity to the Plastic Ball. A beam of hadrons (preferably protons) of similarly low intensity, in the 10 to 26 GeV energy range, is needed for setup purposes and in order to study the scaling with projectile mass. The anticipated date of data taking is spring 1984, with an initial request of 250 hours of devoted PS running time.

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