NA53 - Electromagnetic Dissociation of Co-59 and Au-197 by Pb-208

BNL-Iowa State

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Physics Goals:	Electromagnetic dissociation cross sections
Beams:	Pb at 160 GeV/A
Targets:	Co, Au

Physics Summary

The purpose of NA53 is to measure the electromagnetic dissociation (ED) cross sections for the one- and two-neutron removal reactions of 160 GeV/nucleon Pb beams from the CERN SPS on targets of Co and Au. ED is a process occurring when relativistic heavy ions interact by an exchange of virtual photons. The usual result is the excitation of an E1 or E2 giant resonance. For heavy nuclei the most common mode of deexcitation is by the emission of one or more neutrons. The ED process is expected to become of the order of 60 barns for the colliding Au beams expected for RHIC and is the primary process leading to the degradation of RHIC beams. Our calculations indicate that the ED cross section for one-neutron removal for Pb on Au should be about 26 barns at SPS energies. In the experiment very thin targets of Au and Co will be bombarded in the Pb beam. The bombardments will be carried out upstream from and parasitic to the NA50 experiment. The number of beam particles incident on the target will be counted using the NA50 beam monitors. The activity from the bombarded targets will be measured using gamma-ray spectroscopy in order to determine the yield of the one- and two-neutron removal reactions and various fragmentation reactions. The first measurements will be carried out in December 1994.

Related Experiments

NA40