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Results from the RHIC Beam Energy Scan DANIEL CEBRA, University of California,Davis, STAR COLLABORATION — In 2010 and 2011, RHIC ran a scan of several beam energies in order to map the phase boundary between hadronic and partonic matter. Au+Au collisions were studied at 200, 62.4, 39, 27, 19.6, 11.5, and 7.7 GeV. This range of collision energies is expected to produce systems that reach chemical equilibrium at baryon chemical potentials that range from 25 to 450 MeV. At the lower end of the range of chemical potentials, the transition from partonic to hadronic matter will be a crossover, however at higher chemical potentials (possibly beyond the upper limit of the search range) the transition is expected to be first order. Studies of the RHIC beam energy scan data are searching for signatures of the first order phase transition using signals which are sensitive to the nuclear compressibility. Studies of fluctuations are being used to identify the critical point. Additionally, studies are being pursued to identify where the new phenomena seen at the highest RHIC energies and used to establish the creation of a partonic medium will turn-off. The data from this first Beam Energy Scan have defined the key search energies for these observables. RHIC is now considering a follow-up BES-II to further examine these key energies.

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