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Heavy Ion Collisions and Tests of the Supernova Equation of State K. HAGEL, Cyclotron Institute, Texas A&M University, M. HEMPEL, Department of Physics, University of Basel, 4056 Basel, Switzerland, J.B. NATOWITZ, Cyclotron Institute, Texas A&M University, G. RÖPKE, University of Rostock, FB Physik, Rostock, Germany, S. TYPEL, GSI Helmholtzzentrum für Schwerionenforschung GmbH, D-64291 Darmstadt, Germany, S. WUENSCHEL, R. WADA, M. BARBUI, Cyclotron Institute, Texas A&M University, K. SCHMIDT, Institute of Physics, Silesia University, Katowice, Poland — Understanding the evolution of core-collapse supernovae and the properties of the neutrinosphere requires systematic information on the properties of nuclear matter at a wide range of densities and temperatures. Central collisions in heavy ion reactions at intermediate energies produce nuclear matter on a microscopic scale that has a wide range of density and temperature and thus provide the possibility of probing conditions similar to those of core-collapse supernovae. Hot early reaction stage sources in violent collisions of heavy ion reactions, denoted as femtonovae, are identified and analyzed in the context of a coalescence model. The analysis yields various quantities indicate that temperature and density similar to those near the neutrinosphere are achieved. These results from these analyses are compared to the results of various supernovae simulations and thus provide insight into the supernova equation of state and thus indicate which ingredients in the simulations are important.

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