

Abstract Submitted
for the DNP11 Meeting of
The American Physical Society

Quark matter in neutron stars and core-collapse supernovae¹

IRINA SAGERT, Department of Physics and Astronomy, Michigan State University, TOBIAS FISCHER, MATTHIAS HEMPEL, GIUSEPPE PAGLIARA, JUERGEN SCHAFFNER-BIELICH, THOMAS RAUSCHER, FRIEDRICH-K. THIELEMANN, ROGER KAEPPELI, GABRIEL MARTINEZ-PINEDO, MATTHIAS LIEBENDOERFER — Recent neutron star mass measurements point to compact star maximum masses of at least 1.97 ± 0.04 solar masses and represent thereby a challenge for soft nuclear equations of state, which often go hand in hand with the presence of hyperons or quarks. In this talk I will discuss such high neutron star masses regarding the nuclear equation of state from heavy ion experiments. Furthermore, I will introduce equations of state for core-collapse supernova and binary merger simulations, which include a phase transition to strange quark matter. As was recently shown, neutrino signals from supernova explosions can provide a probe for the low density appearance of quark matter. The compatibility of the latter with high neutron star masses is an interesting and important question and will be addressed in the talk.

¹Submitting author is supported by the Alexander von Humboldt foundation via the Feodor-Lynen fellowship.

Irina Sagert
Department of Physics and Astronomy, Michigan State University

Date submitted: 30 Jun 2011

Electronic form version 1.4