LNGS SEMINAR SERIES

Alessandro Drago

Ferrara University

High density matter in compact stars

I will discuss the possible scenarios concerning the composition of compact stars. In particular I will show that between two to three times nuclear matter saturation density new degrees of freedom appear, in particular delta resonances and hyperons. The production of these particles softens significantly the Equation of State and suggests that stars made of hadrons are maybe not able to describe the most massive compact stars.

I will outline the implications of the existence of another family of compact stars, made (almost) entirely of deconfined quarks, and stable at masses even much larger than two solar masses. The possible signatures of this two-family scenario will be discussed, in particular in relation with the phenomenology of short and long Gamma Ray Bursts and of neutrino signals.

A.D., A. Lavagno, G. Pagliara, Phys. Rev. D89 (2014) 043014
A.D., A. Lavagno, G. Pagliara, D. Pigato, Phys. Rev. C90 (2014) 065809

FEBRUARY 20, 2015 – 11:00 AM
LNGS - "E. MAJORANA" ROOM