



Institut de recherche sur les lois fondamentales de l'univers

ESNT Seminar

Friday 02/02/2018, 11h-12h

Bat 703, DPhN salle de séminaires 135, CEA Saclay, Orme des Merisiers

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Probing ultra dense (and hot) matter

Observed for the first time in 1967 as pulsars, neutron stars represent the most extreme bodies known in our universe. Relict of the gravitational collapse and subsequent supernova explosion of a massive star at the end of his life, they gather a mass of up to twice that of our sun in a sphere with a radius of about 10 km. Their phenomenology is very rich and complex. They are not only very compact, but they are also rotating at frequencies of up to 700 Hz and can have strong magnetic fields of the order 10^{15} G. Modeling requires many different fields of physics such as general relativity, nuclear physics and solid state physics.

During this talk, after an introduction, I will discuss some examples of how the confrontation of observational data with neutron star models allows to probe properties of ultra-dense matter. After GW170817, a prominent one is the neutron star deformability, derived from the gravitational wave signal of a binary neutron star merger.

This seminar is organized in the framework of the sessions of the ESNT workshop on "Nuclear data inputs and astrophysical processes." [<http://esnt.cea.fr/Phocea/Page/index.php?id=78>]. The detailed program of the first one "Nuclear structure and equation of state" (2017, 7-8th Dec.) can be seen on: <http://esnt.cea.fr/Phocea/Page/index.php?id=76>



Web Site of ESNT: <http://esnt.cea.fr>

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