



Contribution ID: 30

Type: **not specified**

A self-consistent study of magnetic field effects on hybrid stars

Wednesday 30 September 2015 17:00 (30 minutes)

In this work we study the effects of strong magnetic fields on hybrid stars by using a full general-relativity approach, solving the coupled Maxwell-Einstein equation in a self-consistent way. The magnetic field is assumed to be axi-symmetric and poloidal. We take into consideration the anisotropy of the energy-momentum tensor due to the magnetic field, magnetic field effects on equation of state, the interaction between matter and the magnetic field (magnetization), and the anomalous magnetic moment of the hadrons. The equation of state used is an extended hadronic and quark SU(3) non-linear realization of the sigma model that describes magnetized hybrid stars containing nucleons, hyperons and quarks. According to our results, the effects of the magnetization and the magnetic field on the EoS do not play an important role on global properties of these stars. On the other hand, the magnetic field causes the central density in these objects to be reduced, inducing major changes in the populated degrees of freedom and, potentially, converting a hybrid star into a hadronic star.

Author: FRANZON, Bruno (FIAS, Goethe-University, Frankfurt am Main)

Co-authors: SCHRAMM, Stefan; DEXHEIMER, Veronica (Kent State University)

Presenter: FRANZON, Bruno (FIAS, Goethe-University, Frankfurt am Main)