

f and r-modes of slowly rotating stars: new results in the linear treatment

Thursday 3 July 2014 17:15 (30 minutes)

Newly born neutron stars can present differential rotation, even if later it should be suppressed by viscosity or a sufficiently strong magnetic field. And in this early stage of its life, a neutron star is expected to have a strong emission of gravitational waves, which could be influenced by the differential rotation. We present here a new formalism for modelling differentially rotating neutron stars, working on the slow rotation approximation and assuming a small degree of differential rotation. After we establish our equilibrium model, we explore the influence of the differential rotation on the f and r-modes of oscillation of the neutron star in the Cowling approximation, and we also analyze an effect of the differential rotation on the emission of gravitational radiation from the f-modes. Finally, we introduce magnetic fields in our model to aiming to consider their influence in the frequencies of the oscillations.

Author: CHIRENTI, Cecilia (Federal University of ABC, Santo André, Brazil)

Co-authors: SKAKALA, Jozef (Federal University of ABC, Santo André, Brazil); REZZOLLA, Luciano (Max Planck Institute for Gravitational Physics, AEI Potsdam, Germany); YOSHIDA, Shin'ichirou (University of Tokyo, Japan)

Presenter: CHIRENTI, Cecilia (Federal University of ABC, Santo André, Brazil)

Track Classification: STARS2013