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## Rossby modes in neutron stars as sources of gravitational waves

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In the present work, we explore the Rossby mode instabilities in neutron stars as sources of gravitational waves. The intensity and time evolution of the emitted gravitational waves in termsof the amplitude of the strain tensor are estimated in the slow rotation approximation using β- equilibrated neutron star matter obtained from density dependent M3Y effective interaction. For a wide range of neutron star masses, the fiducial gravitational and various viscous time scales, the critical frequencies and the time evolutions of the frequencies are calculated. The dissipative mechanism of the Rossby modes is considered to be driven by the shear viscosity along the boundary layer of the solid crust-liquid core interface as well as in the core and the bulk viscosity. It is found that neutron stars with slower frequency of rotation, for the same mass, radius and surface temperature, are expected to emit gravitational waves of higher intensity.

### Biography

The main author Dr. Debasis Atta has completed his PhD at the age of 28 years from Homi Bhabha National Institute, VECC, Kolkata, Govt. Of India. He is currently posted as Assistant Professor in Physics at Govt. General Degree College Kharagpur-II, Government of West Bengal, India. His area of research mostly are on Nuclear physics and Nuclear Astrophysics. He has published more than 9 papers in reputed International Journals and 7 conference proceedings.

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