Differentially rotating spherical shells: Normal modes

The oscillation and stability of differentially rotating spherical shells: The normal-mode problem

abstract An understanding of the dynamics of differentially rotating systems is key to many areas of astrophysics. We investigate the oscillations of a simple system exhibiting differential rotation, and discuss issues concerning the role of corotation points and the emergence of dynamical instabilities. This problem is of particular relevance to the emission of gravitational waves from oscillating neutron stars, which are expected to possess significant differential rotation immediately after birth or binary merger.