Rotating relativistic stars

Friedman, John L., author

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Abstrak

Summary:

"The masses of neutron stars are limited by an instability to gravitational collapse, and an instability driven by gravitational waves limits their spin. Their oscillations are relevant to X-ray observations of accreting binaries and to gravitational wave observations of neutron stars formed during the coalescence of double neutron-star systems. This volume pulls together more than forty years of research to provide graduate students and researchers in astrophysics, gravitational physics, and astronomy with the first self-contained treatment of the structure, stability, and oscillations of rotating neutron stars. This monograph treats the equations of stellar equilibrium; key approximations, including slow rotation and perturbations of spherical and rotating stars; stability theory and its applications, from convective stability to the r-mode instability; and numerical methods for computing equilibrium configurations and the nonlinear evolution of their oscillations. The presentation of fundamental equations, results, and applications is accessible to readers who do not need the detailed derivations