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Impact of the density discontinuity on radial pulsation and tidal deformability of neutron stars

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In this work, we investigate the influence of the phase transition and a stiffer fluid in neutron stars core on the static equilibrium configuration, dynamical stability, and tidal deformability. For this aim, it is taken into account that the fluid on the core and the envelope follow the relativistic polytropic equation of state. We find that phase transition and a stiffer fluid in the core will reflect in the total mass, radius, radial stability with a slow and rapid conversion at the interface, and tidal deformability.

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