

Abstract Submitted
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Massive neutron stars with quark-hybrid matter core MILVA ORSARIA, FRIDOLIN WEBER, San Diego State University, HILARIO RODRIGUES, CEFET-Rio de Janeiro, GUSTAVO CONTRERA, Facultad de Ciencias Astronomicas y Geofisicas de La Plata — Using a nonlocal extension of the SU(3) Nambu-Jona Lasinio model, which reproduces several of the key features of Quantum Chromodynamics, we show that mixed phases of deconfined quarks and confined hadrons (quark-hybrid matter) may exist in the cores of neutron stars as massive as around $2.1 M_{\odot}$. According to our study, the implications for the recently discovered, massive neutron star PSR J1614–2230, whose gravitational mass is $1.97 \pm 0.04 M_{\odot}$, are that this neutron star may contain an extended region of quark-hybrid matter at its center, but no pure quark matter.

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