

The Structure and Signals of Neutron Stars, from Birth to Death



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Neutron stars with hyperon cores: stellar radii and EOS near nuclear density

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We study the impact of the presence of a hyperon core on the R-M relation for neutron stars (NS). Using observational constraint $M_{\max} > 2M_{\text{sun}}$, and available EOSs, we show difference between R-M relation in the mass range 1.2 - 1.6 M_{sun} between NS with nucleon cores and those based on EOS that allow for sizable hyperon cores in high mass NS. We find correlation between pressure at normal nuclear density n_0 and $R(1.4M_{\text{sun}})$ and we critically discuss arguments against the presence of hyperon cores in massive NS. We argue that future LOFT mission with better than 5% precision of measuring simultaneously R and M of NS in some X-ray sources will have potential to rule out sizable hyperon cores in NS.

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