

# The Modern Physics of Compact Stars and Relativistic Gravity

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## Observational constraints of the compactness of the isolated neutron stars

We try to constrain the compactness of the isolated neutron stars by observations, i.e. via X-ray spin-phase resolved spectroscopy.

There are seven thermally emitting neutron stars known from X-ray and optical observations, which are young (up to few Myrs), nearby (hundreds of pc), and radio-quiet with blackbody-like X-ray spectra.

A model with a condensed iron surface and partially ionized hydrogen-thin atmosphere allows us to fit simultaneously the observed general spectral shape and the broad absorption feature (observed at 0.3 keV) in different spin phases. We constrain some physical properties of the X-ray emitting areas, i.e. the temperatures, magnetic field strengths at the poles, and their distribution parameters. In addition, we are able to place some constraints on the geometry of the emerging X-ray emission and the gravitational redshift of the three isolated neutron stars.

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