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NICER and Neutron Star Radii

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Precise and reliable measurements of neutron star radii are essential to our understanding of cold, catalyzed matter beyond nuclear saturation density. Recently, NASA's Neutron Star Interior Composition Explorer (NICER) satellite has provided high-quality data sets that have yielded measurements of the mass ($M=1.44\pm 0.15$ Msun) and radius ($R=13\pm 1.2\text{--}1.0$ km) of the 206 Hz pulsar PSR J0030+0451, and of the radius ($R=13.7\pm 2.6\text{--}1.5$ km) of the $M=2.08\pm 0.07$ Msun, 346 Hz pulsar PSR J0740+6620. I will discuss our group's work on these pulsars and will in particular discuss the assumptions that have gone into our analyses, to help the assessment of our results. I will also discuss the implications of our results for the properties of the dense matter in the cores of neutron stars.

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