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## X-ray pulse profile modeling

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X-ray pulses of rapidly rotating neutron stars (NSs) can be used to probe both the properties of heated surface regions of a NS and the equation of state (EoS) of high-density matter inside a NS. Constraints on the EoS are obtained by measuring the mass and radius of the NS based on the relativistic effects when photons travel from the stellar surface to the observer. During the last few years, NICER telescope has been used to study several rotation-powered millisecond pulsars using this technique. I will review our latest analysis for the first published pulsar PSR J0030+0451, the massive pulsar PSR J0740+6620, and the brightest pulsar PSR J0437–4715. In addition, I will discuss our recent progress in applying the pulse profile modeling method to accretion and thermonuclear-powered millisecond pulsars.

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