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# X-ray pulse profile as a new probe for dark matter halo around neutron stars

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X-ray telescopes—NICER, eXTP, ATHENA, and STROBE-X—offer a promising probe of the structure of compact objects such as neutron stars. A dark-matter halo surrounding these objects alters the local space-time and, in turn, affects light propagation. In this work, we examine the impact of forming a self-interacting bosonic dark-matter halo around neutron stars, aiming to identify signatures that may shed light on the nature of dark matter.

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