

ABSTRACT ONLY

THERMAL EVOLUTION OF OLD NEUTRON STARS

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Oral Contribution. Passively cooling neutron stars (NSs) are expected to reach undetectably at low temperatures within less than $10^7 yr$. However, likely thermal ultraviolet emission was observed from the Gyr-old millisecond pulsar *PSR J0437 – 4715*. A couple of mechanisms proposed in the literature could keep NSs hot beyond the standard cooling time. According to Gonzalez & Reisenegger 2010, the most important of them are Rotochemical Heating (Reisenegger 1995) and Superfluid Vortex Creep (Alpar et al. 1984). Now, we are considering more heating mechanism like crustal heating (Gusakov, Kantor & Reisenegger 2015) as example, and different Equations Of States (EOS) like BSk family (as example), to the understanding of the thermal evolution of NSs. This results also are compared with Hubble Space Telescope observations of another three old neutron stars. The crossover of theoretical frame and observation of the thermal evolutions provides an important contribution to the understanding of the nuclear matter inside of the NSs.

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