

The Structure and Signals of Neutron Stars, from Birth to Death



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Statistical ages and the cooling rate of X-ray dim isolated neutron stars

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The cooling theory of neutron stars is corroborated by its comparison with observations of thermally emitting isolated neutron stars and accreting neutron stars in binary systems. An important ingredient for such an analysis is the age of the object, which, typically, is obtained from the spin-down history. This age is highly uncertain if the object's magnetic field varies appreciably over time. Other age estimators, such as supernova remnant ages and kinematic ages, only apply to few handful of neutron stars. We conduct a population synthesis study of the nearby isolated thermal emitters and obtain their ages statistically from the observed luminosity function of these objects. We argue that a more sensitive blind scan of the galactic disk with the upcoming space telescopes can help to constrain the ages to higher accuracy.

Author: Dr GILL, Ramandeep (CITA (University of Toronto))

Presenter: Dr GILL, Ramandeep (CITA (University of Toronto))

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