

Magneto-rotational and thermal evolution of near-by young neutron stars

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We perform population synthesis of near-by (up to a few kpc) young (less than a few Myrs) neutron stars. We consider objects observable in soft X-rays due to their thermal surface emission. Observations demonstrate that about a dozen of young cooling neutron stars are observed in the solar vicinity. They represent two populations: radio pulsars and so-called “Magnificent Seven”. We study how properties of these sources can be reproduced in different models of cooling (including different EoS of neutron stars) and field evolution.

We demonstrate that despite the $\log N - \log S$ distribution can be reproduced in different models, it is not easy to reproduce the $P - \dot{P}$ distribution without fine tuning of the initial magnetic field distribution or selection effects.

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