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Investigating dense matter using Neutron Star observations

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Neutron Stars are compact objects which interior is subject to extreme densities, gravitational fields and magnetic fields. As such conditions cannot yet be reproduced in laboratories, astronuclear physicists use multi-messenger astronomy to turn Neutron Stars into our very own extraterrestrial laboratories for dense matter. We present some recent results established from X-ray measurements of Neutron stars observed in binary systems; a new nuclear hopothesis is established to try and reproduce the exhibited luminosities of sources that have only accreted small amounts of matter from their companion star. We also put into question some established relations between several macroscopic parameters of Neutron Stars when the nuclear model used for their interior is not consistently calculated for all parts of the star.

Language

English

Field

Astrophysics, nuclear physics, compact objects, dense matter

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