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Nuclear

Pasta

ANDRE

DA SILVA SCHNEIDER, CHARLES HOROWITZ, DON BERRY, CHRISTIAN BRIGGS, Indiana University — For decades it has been theorized that just below nuclear saturation density matter undergoes a series of phase transitions. These phases, which are expected to exist in core-collapse supernovae and neutron stars, involve a range of exotic nuclear shapes collectively known as nuclear pasta. Recently, Jose Pons and collaborators suggested that “the maximum period of isolated X-ray pulsars may be the first observational evidence for an amorphous inner crust, ..., possibly owing to the existence of a nuclear pasta phase.” In this talk we present results of semi-classical molecular dynamics simulations of nuclear pasta and discuss how each phase might contribute to neutron star crust properties.

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