

Abstract Submitted
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Pycnonuclear fusion in the crust of accreting neutron stars MARY BEARD, University of Notre Dame, EDWARD BROWN, Michigan State University, LEANDRO GASQUES, University of Lisbon, Portugal, RITA LAU, HENDRIK SCHATZ, Michigan State University, MICHAEL WIESCHER, University of Notre Dame, DIMITRI YAKOVLEV, University of St. Petersburg, Russia, JOINT INSTITUTE FOR NUCLEAR ASTROPHYSICS COLLABORATION — Pycnonuclear fusion processes take place at extreme density conditions of $\rho > 10^{10}$ g/cm³, anticipated for the core of white dwarfs or the crust of neutron stars. A formalism was developed for predicting pycnonuclear reaction rates for neutron rich nuclei in the carbon to magnesium range. The reaction rates have been used to simulate pycnonuclear burning in the deeper crust of an accreting neutron star. The pycnonuclear reaction rates will be presented and the results of the nucleosynthesis simulations will be discussed.

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