

Abstract Submitted
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Nuclear Mass Predictions for Neutron Stars with a Bayesian Neural Network RADITYA UTAMA, JORGE PIEKAREWICZ, Florida State University — Many models have been proposed to estimate the values and uncertainties of nuclear masses that are essential for several nuclear and astrophysical scenarios, such as the composition of the outer crust of a neutron star. Here we apply a Bayesian neural network (BNN) method on the simple liquid drop model and other prominent mass models to make new predictions of nuclear masses. The BNN predictions are computed by fitting the mass difference between the theoretical predictions and the experimental value from the AME2012 compilation. We found that the mass predictions for the crustal region are improved significantly and we are planning to apply BNN techniques in the future to make new predictions for other nuclear observables.

Raditya Utama
Florida State University

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