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Peer Review

Review of: "General Features of the Stellar Matter Equation of State From Microscopic Theory, New Maximum-Mass Constraints, and Causality"

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The paper employs composite equations of state to model neutron star structure. The authors use chiral effective field theory, motivated by nuclear theory and experiment, at N2LO and N3LO below about 1.5 times nuclear saturation density. Above this, they use two piece-wise polytropes. They choose the parameters of the polytropes to satisfy the latest astrophysical constraints on the maximum neutron star mass and causality. The authors also compute the cooling curves resulting from their composite equations of state. While the results are not completely novel, they are an example of how composite equations of state can be used to consistently model neutron stars meeting all experimental and astrophysical constraints. Additional comparison to other available equations of state, both in terms of the mass-radius relation and cooling curves, would be welcome additions.

Declarations

Potential competing interests: No potential competing interests to declare.

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