Abstract Submitted
for the APR21 Meeting of
The American Physical Society

Improved treatment of neutron star cooling via modified Urca Process[1] ZIYUAN ZHANG, MARK ALFORD, Washington University in St. Louis — Most neutron stars cool predominately via the modified Urca process, in which emitted neutrinos carry away energy. The traditional treatment for the in-medium nucleon propagator in the modified Urca process uses crude approximations. We reformulate the propagator by including the nucleon self-energy and examine the effect of this new propagator on the neutrino emissivity due to the modified Urca process.

[1]This research was partly supported by the U.S. Department of Energy, Office of Science, Office of Nuclear Physics, under Award No. DE-FG02-05ER41375

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Date submitted: 11 Jan 2021 Electronic form version 1.4