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Response functions for hot and dense nuclear nuclear matter from chiral nuclear forces[1] EUNKYOUNG SHIN, JEREMY HOLT, 1Cyclotron Institute, Texas AM University, 2Department of Physics and Astronomy, Texas AM University, ERMAL RRAPAJ, 1School of Physics and Astronomy, University of Minnesota, 2Department of Physics, University of California, Berkeley, SANJAY REDDY, Institute for Nuclear Theory, University of Washington — Response function gives an idea to understand interaction in the matter. We derived density density response and spin spin response function, which is including up to 1st order perturbation(mean field correction and vertex correction). We studied neutrino interaction(neutrino scattering and neutrino absorption) in the nuclear matter(pure neutron matter and nuclear matter with small proton fraction) with response function. The nuclear potential is derived from chiral effective field theory. We use three different cutoff energies (414, 450, 500 MeV). Finally, we calculate the dynamic structure function with response function. Since the scattering rate can be calculated using structure function, the study gives a hint for the neutrino process on core collapsing supernova simulation.

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