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Thermal Effects in Dense matter beyond mean field theory SUDHANVA LALIT, Ohio Univ, CONSTANTINOS CONSTANTINOU, JCHP, Julich, Germany, MADAPPA PRAKASH, Ohio Univ — The formalism of next-to-leading order Fermi Liquid Theory is employed to calculate the thermal properties of symmetric nuclear and pure neutron matter in a relativistic many-body theory beyond the mean field level which includes two-loop effects. For all thermal variables, the semi-analytical next-to-leading order corrections reproduce results of the exact numerical calculations for entropies per baryon up to 2. This corresponds to excellent agreement down to subnuclear densities for temperatures up to 20 MeV. In addition to providing physical insights, a rapid evaluation of the equation of state in the homogeneous phase of hot and dense matter is achieved through the use of the zero-temperature Landau effective mass function and its derivatives.

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