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Thermal Properties of Hot and Dense Matter BRIAN MUCCIOLI, Ohio Univ, CONSTANTINOS CONSTANTINOU, Institute for Advanced Simulation, Institut fur Kernphysik, and Julich Center, MADAPPA PRAKASH, Ohio Univ, JAMES LATTIMER, Stony Brook Univ — We have calculated the thermal properties of hot and dense matter of relevance to core-collapse supernovae, neutron stars from their birth to old age, and mergers of compact binary stars using zero- and finite- range potential models (e.g., Skyrme, APR, MDI, etc.) as well as relativistic mean-field theoretical models. Properties explored include the pressure, energy density, entropy per baryon, inverse susceptibilities, specific heats at constant volume and pressure, and the thermal and adiabatic indices of isospin asymmetric matter containing leptons and photons. In all cases, comparisons of the exact numerical results with analytic results are performed to delineate the density and temperature regions for which matter is degenerate, semi-degenerate or non-degenerate. In this talk, similarities and differences between the results of the models studied will be reported. The influence of the nucleon Landau effective masses on the thermal properties will be highlighted.

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