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From thermo- to pycno-nuclear reactions in multi-component dense matter¹ LEANDRO GASQUES, University of Lisbon, MICHAEL WIESCHER, University of Notre Dame, DIMITRI YAKOVLEV, Ioffe Physico-Technical Institute, JINA COLLABORATION — We analyze thermonuclear and pycnonuclear reaction rates in multi-component dense stellar plasma. First we describe calculations of the astrophysical S -factor at low energies using the São Paulo potential on the basis of the barrier penetration model. Then we present a simple phenomenological expression for a reaction rate. The expression contains several fit parameters which we adjust to reproduce the best microscopic calculations available in the literature. For illustration, we applied the results to study nuclear burning in a ^{12}C - ^{16}O mixture in a wide range of densities and temperature.

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Leandro Gasques
lrgasques@hotmail.com
University of Lisbon

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