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Direct study of eos mixing laws through an orbital-free-molecular-dynamics point of view FLAVIEN LAMBERT, JEAN-FRANCOIS DANEL, LUC KAZANDJIAN, JEAN CLEROUIN, CEA DIF — We have investigated eos mixing rules by an approach coupling consistently molecular dynamics for the nuclei and orbital free density functional theory for the electronic fluid. This framework allowed us to study, without mixing approximation, mixtures in the hot and dense regime – *ie* a plasma strongly coupled and partially degenerated –, regime relevant for inertial confinement fusion. Several mixtures borrowed from this field have been examined in order to both present the method and check the validity of eos mixing rules commonly used in hydrodynamics simulations.

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[2] F. Lambert, J. Clerouin, and S. Mazevet. Structural and dynamical properties of hot dense matter by a Thomas-Fermi-Dirac molecular dynamics. *Europhysics Lett.*, 75(5):681–687, 2006.

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