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Dynamics of strongly correlated ions in a partially ionized quantum plasma — •Patrick Ludwig[1], Michael Bonitz[1], Hanno Kählert[1], and James W. Dufty[2] — [1]Institut für Theoretische Physik und Astrophysik, Christian-Albrechts-Universität Kiel — [2]Department of Physics, University of Florida, Gainesville (USA)

A scheme which allows to compute the dynamics of strongly correlated classical ions embedded into a partially ionized quantum plasma by first principles molecular dynamics is presented. The dynamically screened dust approach of Joyce and Lampe [Phys. Rev. Lett. 88, 095006 (2002] is generalized to quantum systems. The electrons are treated fully quantum-mechanically taking into account their dynamical screening of the ion-ion interaction in linear response on the basis of an extended Mermin formula. The scheme allows to include the effect of the electron dynamics, electron streaming, wake effects and electron magnetization.

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