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Extracting thermodynamic and transport data from the dynamic structure factor of Yukawa liquids HANNO KAEHLERT, Kiel University — The thermodynamic and transport coefficients of warm dense matter and dense plasmas are of high interest for the modeling of inertial confinement fusion or planetary interiors. Using the Yukawa liquid as a model system for a dense plasma, it is shown that several of these coefficients can be extracted from the dynamic structure factor (DSF). To this end, the DSF is computed from molecular dynamics simulations over a wide range of coupling strengths and analyzed using two extensions of the hydrodynamic model to finite wavenumbers and frequencies. The results are found to be in good agreement with recent data in the literature from a variety of different methods.

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