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Exact results for WDM from many-body theory and simulations

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The analytical approach to the theory of dense plasmas can be given within the framework of the formalism of Green's functions.While in general approximations have to be performed, exact results can be derived in limiting cases. They serve as a benchmark for numerical simulations such as DFT or PIMC simulations and can be used to derive interpolation formulas.

As an example, we consider the equation of state, the electrical conductivity and the ionization potential depression.

From the Green's function approach, the medium corrections of a few-body system embedded in a dense plasma are obtained in a systematic way. Of particular interest is the Mott effect, which describes the dissolution of bound states with increasing density.

Primary author: Prof. RÖPKE, Gerd (Institute of Theoretical Physics, University of Rostock)

Presenter: Prof. RÖPKE, Gerd (Institute of Theoretical Physics, University of Rostock)