

Abstract Submitted
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Diffusion Coefficients for White Dwarf Astrophysics IAN FREEMAN, MATT CAPLAN, Illinois State University — Recent advances in observation and theory motivate us to revisit the diffusion coefficients of Coulomb plasmas for white dwarf astrophysics. We use molecular dynamics simulations to determine the diffusion coefficients for pure compositions of $0.40 \leq Z/A \leq 0.50$ nuclei with a range of screening factors typical for white dwarf interiors between $2 < \Gamma < 200$. We propose an empirical law which is valid in across coupling regimes, building on of earlier extensions of Chapman-Spitzer. This law is intended for easy implementation in stellar evolution codes and should be accurate to the percent level which should be sufficient to remove any modeling uncertainty due to the diffusion coefficients.

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