

Abstract Submitted
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Thermodynamics of systems of aligned dipoles¹ K.M. DAILY, Purdue University, D. BLUME, Washington State University — The high-temperature thermodynamics of two-component Fermi gases with interspecies *s*-wave scattering length is well described by the virial equation of state. This work determines the virial equation of state of weakly-interacting dipolar Bose and Fermi gases under external spherically symmetric confinement. The second-order virial coefficients for two identical dipolar bosons, two identical dipolar fermions and two distinguishable dipoles are calculated from the trap energy spectra. Away from resonance, we employ the Born approximation and find that the virial coefficient for two identical fermions depends quadratically on the dipole length. This suggests that dipolar effects are suppressed in the high temperature limit. Fine tuning the scattering properties of two identical fermions, we identify conditions in which the second-order virial coefficient depends linearly on the dipole length. Analytical expressions are derived and corroborated by numerical calculations.

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