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Comparison of Van der Waals Potential calculations to experimental results[1] CATHY KLAUSS, VINCENT LONIJ, WILL HOLMGREN, ALEX CRONIN, University of Arizona — The strength of the Van der Waals atom-surface interaction (C3) depends not only on the polarizability of the atoms but also on the permittivity of the surface. We compare calculations of C3 based on different models for metal surfaces and insulators as well as different models for the atom. The electric dipole polarizabilities of alkali atoms are calculated using a Lorentz oscillator model as well as a model that includes core electrons and relativistic effects. To model metal and insulating surfaces we compare a Drude model to models that include the band gap or interband transitions in the material. We compare the results of our calculations with recent experimental results from atom interferometer and atom diffraction experiments.

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