

Abstract Submitted
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Evidence for the role of core electrons in Van der Waals atom-surface potentials¹ VINCENT LONIJ, CATHY KLAUSS, WILL HOLMGREN, ALEX CRONIN, University of Arizona — Van der Waals (VdW) and Casimir-Polder potentials are the dominant interactions between charge-neutral objects at nano- to micrometer length scales. They have attracted considerable interest in the field of nanotechnology. Understanding of these potentials is important in searches for new forces such as deviations from Newtonian potentials at very short length scales and vacuum friction. We measured ratios of the VdW potential strength (C3) by diffracting different atoms from the same nano-structure. We report ratios of C3 with a precision better than 3%. At this level of precision we are sensitive to the contribution of core electrons in the atom. These ratios are insensitive to surface properties and independent of the shape of the potential.

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