Abstract Submitted
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Study of high-order effects in atom-surface interactions[1] FANG-FEI WU, LI-YAN TANG, State Key Lab. Magnetic Resonance and Atomic and Molecular Physics, WIPM, CAS, Wuhan, F. BABB JAMES, ITAMP, Harvard-Smithsonian CfA, ZONG-CHAO YAN, U. New Brunswick, Fredericton — Atom-surface interactions have attracted much attention in connection with, for example, experiments on quantum reflection and Bose-Einstein condensed or ultracold atoms confined near surfaces or in atomic-photonic devices. So far, most work has been focused on the leading term of the long-range interaction coefficient C3 between an atom and a perfectly conducting surface. In this work, using existing dielectric response functions of realistic materials, the high-order dispersion coefficients C5, C7, C9, and C11 between one of the H, He, or Li atoms and a dielectric macroscopic surface are calculated, including finite nuclear mass corrections, using Gaussian quadrature. Our results may be used to construct accurate atom-surface potential energy curves.

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