Abstract Submitted
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Multiscale quantum defect theory[1] BO GAO, University of Toledo — We present a quantum defect theory of two-body interaction for a reference potential consisting of multiple terms of the form of $-C_m/r^m$ with $m > 2$, each with its distinctive length scale $\beta_m = (2\mu C_m/\hbar^2)^{1/(m-2)}$. We discuss the motivations and applications of the theory, and show how it can be formulated as an extension and a generalization of the single-scale theory of Gao [Physical Review A **78**, 012702 (2008)]. The atom-atom long-range interaction of the form $-C_6/r^6 - C_8/r^8 - C_{10}/r^{10}$ is used as an example in the context of the general formulation.

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