

Abstract Submitted  
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**Long-range interactions between two excited helium atoms**<sup>1</sup> J.-Y. ZHANG, Z.-C. YAN, Department of Physics, University of New Brunswick, Fredericton, New Brunswick, Canada E3B 5A3, D. VRINCEANU, T-4 Group, Los Alamos National Laboratory, Los Alamos, New Mexico 87545, USA, J.F. BABB, H.R. SADEGHPOUR, ITAMP, Harvard-Smithsonian Center for Astrophysics, Cambridge, Massachusetts 02138, USA — Using variational wave functions in correlated Hylleraas coordinates, we have precisely calculated the dispersion coefficients  $C_n$  (with  $n$  up to 10) for the long-range interaction between two excited helium atoms including the effect of finite nuclear mass. In this work, the long-range interaction coefficients reported are  $C_3$ ,  $C_6$ ,  $C_8$ ,  $C_9$ , and  $C_{10}$  for He( $2^1S$ )–He( $2^1P$ );  $C_6$ ,  $C_8$ , and  $C_{10}$  for He( $2^3S$ )–He( $2^1P$ ); and  $C_5$ ,  $C_6$ ,  $C_8$ , and  $C_{10}$  for He( $2^1P$ )–He( $2^1P$ ) and He( $2^1P$ )–He( $2^3P$ ) for the  $\Delta$ ,  $\Pi$ , and  $\Sigma$  molecular states.

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