Abstract Submitted
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Positron-atom scattering using pseudo-state energy shifts[1] JIM MITROY, JUN-YI ZHANG, ARC Center for Anti-Matter Studies, School of Engineering, Charles Darwin University, Darwin N.T., Australia, MICHAEL BROMLEY[2], SCOTT YOUNG, Department of Physics, San Diego State University, San Diego CA — A simple way to generate low-energy phase shifts for elastic scattering using bound-state calculations is applied to the problem of e^+-Mg and e^+-Zn scattering. The method uses the energy shift between a small reference calculation and the largest possible configuration interaction calculation of the lowest energy pseudo-state/s as the input to tune a semi-empirical optical potential. The s- and p-wave phase shifts up to the first excitation threshold are given for both systems. The e^+-Mg cross section has a prominent p-wave shape resonance at an energy of about 0.0094 eV with a width of 0.0108 eV. The cross section maxima is about 4800 a_0^3, while the $Z_{\rm eff}$ achieves a value of 1300 at an energy of 0.108 eV.

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