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Binding energy of  $e^+$ Li using the Peach model potential. JANINE SHERTZER, College of the Holy Cross, SANDRA WARD, University of North Texas — The l-independent, parametric model potential developed by Peach<sup>1</sup> for describing the electron interaction with the alkali ion core yields energy levels that are in excellent agreement with experiment. Because of its relative simplicity, this model potential is an attractive choice for studying  $e^+$ - Li collisions;<sup>2,3</sup> the  $e^+$ -ion core interaction is obtained by changing the sign of the static term in the interaction. In order to test the usefulness of the potential for describing the physics of an effective three-body system, we calculated the binding energy of e<sup>+</sup>Li. This is a stringent test, because the system is very weakly bound. Our results are in excellent agreement with previous calculations,<sup>4</sup> including those using the exact four-body Hamiltonian.<sup>5</sup> This work was funded by NSF under collaborative Grant PHYS-0440714 (JS) and PHYS-0440565 (SJW). <sup>1</sup>G. Peach, H.E. Saraph and M.J. Seaton, J. Phys. B 21, 3669 (1988). <sup>2</sup>M.S.T. Watts and J.W. Humberston, J. Phys. B 25, L491 (1992). <sup>3</sup>S. J. Ward and J. Shertzer, Phys. Rev. A 68, 032720 (2003). <sup>4</sup>J. Mitroy, M.W.J. Bromley, and G.G. Ryzhikh, J. Phys. B **35**, R81 (2002). <sup>5</sup>Massimo Mella, Gabriele Morosi, and Dario Bressanini, J. Chem. Phys. 111, 108 (1999).

> Janine Shertzer College of the Holy Cross

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