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Stability of the helium-antiproton system RICHARD DRACHMAN, NASA-Goddard Space Flight Center — In the course of their Born-Oppenheimer calculations of this system Todd and Armour[1] noted that the lowest-lying state closely resembles the hydrogen negative ion, since the antiproton lies very close to the helium nucleus and shields one unit of nuclear charge. In the present paper this observation will be taken seriously to produce a variationally correct estimate of the total energy of this system, along with a similar estimate of the energy of the once-ionized system. The nonadiabatic effect of exactly treating the reduced masses improves the results.

[1]A. C. Todd and E. A. G. Armour, J. Phys. B **38**, 3367 (2005)

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