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Electron Transfer, Ionization, and Excitation in Collisions between α Particles and H(1s) Atoms. THOMAS WINTER, Penn State University, Wilkes-Barre Campus — At the last DAMOP meeting,¹ the author reported Sturmian calculations on electron transfer in 8-200 keV α -H collisions, both checking numerically and extending to somewhat lower energies and substantially larger bases the calculations carried out a quarter of a century ago, which were limited to 19-24 states.² The importance of revisiting earlier coupled-state calculations- –limited by the computers then available—was pointed out in a recent review.³ Present larger basis calculations should be able to extend the range of energies while treating ionization as well as capture and excitation to lower individual states up to n = 3, albeit with much less accuracy than the summed cross section. Further, rough error bars may be placed on the cross sections by comparing values with different bases. The present calculations are with up to about 80 states on a 3.3 GHz IBM ThinkPad, taking on the order of one hour per integrated cross section.

¹T. G. Winter, Bull. Am. Phys. Soc. **50**, 82 (2005).

²T. G. Winter, Phys. Rev. A **25**, 697 (1982).

³T. G. Winter, Adv. At. Mol. Opt. Phys. **52**, 391 (2005).

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