Abstract Submitted
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Electron Capture in Collisions between Protons and Hydrogen Atoms THOMAS WINTER, Penn State University, Wilkes-Barre Campus — Cross sections have been determined for electron transfer as well as direct excitation and ionization in p-H collisions using the symmetric double-center Sturmian bases $\leq 16(s,p,d)$ on each center (176 states in all) and $\leq 13(s,p,d,f)$ on each center (220 states in all) for proton energies $1-100$ keV, substantially expanding pioneering Sturmian calculations carried out thirty years ago.[1] At energies $100-1000$ keV, Sturmian calculations have been carried out with the asymmetric basis $\leq 30(s,p,d,f)$ centered on the target nucleus and only $1s$ centered on the projectile. The computer code for arbitrary nuclear charges, recently applied to α-H collisions,[2] has been specialized to the homonuclear case, halving the computing time. The results may be compared with large basis, double-center Gaussian results[3]; triple-center results[4]; double-center, even-tempered basis results[5]; other theoretical results; and numerous experimental results.

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