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Absolute cross section for positron impact ionization of hydrogen near threshold S.J. WARD, KRISTA JANSEN, University of North Texas, JANINE SHERTZER, College of the Holy Cross, J.H. MACEK, University of Tennessee and Oak Ridge National Laboratory — The hyperspherical hidden crossing method (HHCM) is used to investigate positron impact ionization of hydrogen near threshold. In this quantum calculation, the adiabatic Hamiltonian for arbitrary L is expanded about the Wannier saddle point. The lowest order equation is solved analytically for the adiabatic eigenvalue; we use first and second order perturbation theory to calculate correction terms. We show that the Wannier threshold law and the extended threshold law are independent of L . We calculate absolute positron impact ionization cross sections for partial waves $L = 0, 1, 2, 3$ in the energy range $0 < E < 10\text{eV}$. Within the framework of HHCM, positron impact ionization occurs via the ground state Ps-formation channel. Because the S-wave ground state Ps-formation cross section is small (the Stückelberg phase is close to π), the S-wave ionization cross section is also small.

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