

Abstract Submitted
for the DAMOP05 Meeting of
The American Physical Society

Hyperspherical hidden crossing calculation of Ps formation cross section for low-energy $e^+ - \text{Li}$ collisions JANINE SHERTZER, College of the Holy Cross, SANDRA WARD, University of North Texas — Using the hyperspherical hidden crossing method (HHCM), we have computed the s -, p -, d - and f -wave Ps formation cross sections for $e^+ - \text{Li}$ collisions in the energy range $0 - 1.8\text{eV}$.^{1,2} We have also computed the partial wave cross sections by including a correction term to the HHCM that arises from the one-Sturmian theory (HHCM^{+cor}). The effect of including the core polarization term in the model potential was also investigated (HHCM_{cp}, HHCM_{cp}^{+cor}). The Stuckelberg phase varied only slightly with the incident positron momentum and decreased in a systematic way with increasing partial wave L . The f -wave contribution to the Ps formation cross section was significant near the $\text{Li}(2p)$ threshold. In all four calculations the cross section summed over the lowest four partial waves lies between the experimental measurements of the lower and upper limits.³

¹S.J. Ward and J. Shertzer, Phys. Rev. A **68**, 032720 (2003).

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³E. Surdutovich, J.M. Johnson, W.E. Kauppila, C.W. Kwan and T.S. Stein, Phys. Rev. A **65**, 032713 (2002); private communication.

Janine Shertzer
College of the Holy Cross

Date submitted: 25 Jan 2005

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