

Abstract Submitted  
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**New measurements of positron annihilation on molecules using an enhanced energy-resolution trapped based beam.**<sup>1</sup> J. R. DANIELSON, S. GHOSH, C. M. SURKO, University of California, San Diego — Experiments have shown that low-energy (sub eV) annihilation spectra of positrons on molecules are typically dominated by relatively sharp features that have been identified as vibrational Feshbach resonances (VFR) involving fundamental modes. Further, in most molecules there is a broad spectrum of enhanced annihilation between the fundamentals, in the region of combination and overtone vibrational modes, where the density of modes is typically too high to identify discrete modes. Ultimately, the experimental resolution of the spectrum is dependent on the energy resolution of the positron beam. Over the last several years, we have made a number of advancements in understanding the factors limiting the energy resolution of trapped based positron beams. Experiments demonstrating the effect of increased resolution on the measured annihilation spectra will be presented. Prospects for clarifying the role of combination and overtone modes in the broad background spectrum will also be discussed.

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