

Abstract Submitted  
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**Positron Annihilation in the Undergraduate Laboratory**<sup>1</sup> JASON ENGBRECHT, St. Olaf College — While there are a variety of undergraduate laboratory experiments in the literature, they tend to focus on specific positron experiments and use specialized equipment that limit their flexibility. Here we present a positron spectroscopy experimental apparatus designed for the undergraduate lab. Rather than specialized pulse processing the apparatus utilizes a PC oscilloscope as its primary data acquisition utility with pulse processing happening in software instead of hardware. This allows the apparatus to explore a variety of physical phenomena with the positron annihilation including material science, 2 and 3 gamma annihilation properties, polarimetry via Compton scattering, QED tests, and local hidden variable theories. The supporting software is flexible and allows students to pursue these experiments through exploration rather than simply supporting data acquisition.

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