

Abstract Submitted  
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**A New, High-Resolution Positron Beamline** JAMES SULLIVAN, VIOLAINE VIZCAINO, JENS HUFT, GERARD ATKINSON, Australian National University, ADRIC JONES, Flinders University, STEPHEN BUCKMAN, Australian National University, AUSTRALIAN POSITRON BEAMLINE FACILITY TEAM — A new positron beamline has been constructed based on the techniques established by the Surko group at UCSD. The beamline uses a buffer gas trap system to trap and cool positrons before producing a pulsed high resolution positron beam, for the study of atomic and molecular collision processes [1]. The system has been designed to take advantage of the techniques developed in San Diego for studying scattering in a magnetic field, which have revolutionised the study of low energy positron collisions. However, experiments on helium are impossible on the San Diego system, due to the use of cryopumps for maintaining vacuum. To allow for experiments on helium, the new experiment uses turbopumps. In addition, a charge sensitive detection system is also in place, enabling the use of electrons in the system. This not only provides for a direct comparison with well known electron cross sections, but also will allow the new techniques to be applied to electron scattering, in particular with regards to total excitation cross sections, where measurements have been difficult using conventional scattering techniques. [1] Gilbert et al., *Appl. Phys. Lett.* **70**, 1944 (1997)

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