Absolute Differential Positronium-Formation Cross Sections From The Inert Atoms

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Absolute differential cross sections for ground-state positronium formation near zero degrees have been measured using the positronium beamline at UCL [1] from Ne, Ar, Kr and Xe targets [2], expanding and complementing previous work with Ar, He, H_2 and CO_2 [3]. The ratios of the differential to integral positronium formation cross-sections for each target will also be presented. These provide a measure of the degree of forward collimation of the positronium production process as a function of energy. Examples are shown in figure 1 for Ar. In addition, trends among targets have been observed consistent with the statistical description of inelastic processes [4] and will be discussed at the conference.

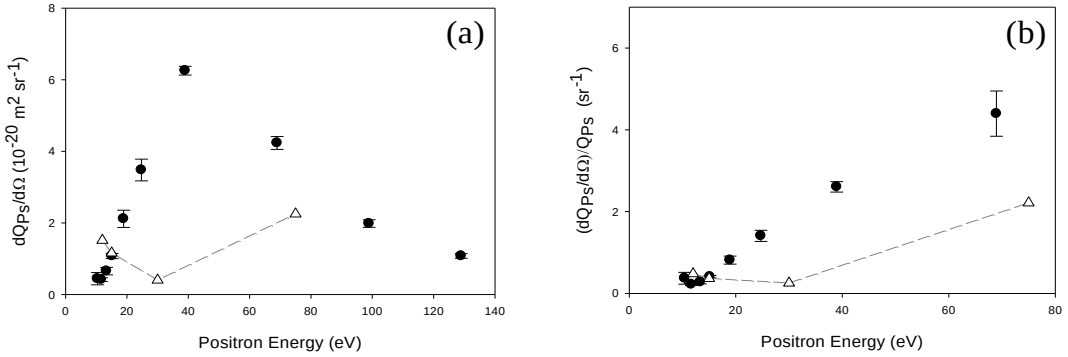

Figure 1. *(a) Differential Ps formation cross section and (b) forward collimation for Ar near zero degrees [3]. Also shown are the truncated coupled-static calculation of McAlinden and Walters (triangles) [5] and a dashed line to guide the eye.*

References

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