LINE SHAPE DEPENDENCE ON THE DISTANCE OF DETECTION FROM THE FOCAL PLANE OF AN ELECTRON HEMISPHERICAL DEFLECTION ANALYSER

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We investigate the energy resolution and linearity of the line shape formed on a 2-D position sensitive detector (PSD) as a function of the distance *h* of the PSD from the exit plane of a biased paracentric hemispherical deflector analyzer with 4-element injection lens used for high resolution Auger projectile electron spectroscopy of ion-atom collisions. The distance *h* is varied by a piezo-electric motor which can be controlled by LabVIEW from outside the vacuum chamber. The goal is to empirically determine the optimal distance *h* for best energy resolution and peak energy linearity along the dispersion direction (across the PSD). Also included are comparisons to ion optics simulations using both the finite difference and the boundary element methods. Results will be presented from measurements using a hot-wire electron gun as well as Auger electron from ion-atom collisions.