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**Asymmetry of the Compton profile** BARUN K. CHATTERJEE, SUPRAKASH C. ROY, Bose Institute, Kolkata, India, TIHOMIR SURIĆ, R. Bošković Institute, Zagreb, Croatia, LARRY A. LAJOHN, RICHARD H. PRATT, University of Pittsburgh, Pittsburgh, PA 15260, USA — Compton scattering of a photon by bound electrons is one of the fundamental processes of interaction of radiation with matter. It is often used to investigate structure of atomic systems, molecules and solids. In studying structure, an approximate theoretical approach is used (impulse approximation, IA) which allows interpretation of the measurements in terms of the structure of the system under investigation. Accurate measurements of the Compton profile (which is an appropriately normalized Compton scattering doubly differential cross section, differential in outgoing photon energy and angle) have revealed discrepancies between measurements and simple IA results. These discrepancies are described as an asymmetry of the Compton profile. We investigate these asymmetries numerically by using S-matrix calculations of the Compton process, and we find that they can largely be understood as a shift of the Compton profile maxima. We compare our results with other theoretical investigations of this issue.

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