

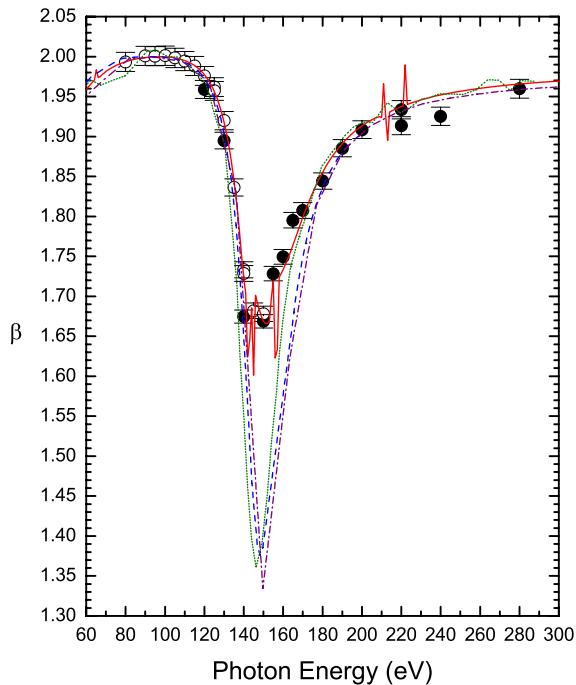
Angular Distributions of the Xe 5s Subshell in the Region of the Second Copper Minimum

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We examine the case of strong interchannel coupling in the second Cooper minimum of Xe 5s subshell photoionization. This investigation was prompted by previous measurements [1] which showed some discrepancies with a relativistic random phase approximation (RRPA) calculation [2] and later experiments [3] which indicated an asymmetry in the β curve not present in the data of Ref. [1].



Our results are in good accord with a previously published measurement on the low energy side of this minimum [1], but show a much slower return to $\beta = 2.0$ on the high energy side of the minimum, indicating a strong asymmetry in the β curve in qualitative agreement with the data from Ref. [3]. We also compare our results to several different theoretical calculations and find excellent agreement with a relativistic time-dependent density functional theory (RTDDFT) calculation over the entire photon energy range measured.

A comparison between our β values, obtained at both the PGM and the VLS-PGM (open and filled circles), and several RRPA calculations of varying levels of sophistication and the RTDDFT calculation (solid line) are shown in the figure above.

[1] Hemmers O, Manson S T, Sant'Anna M M, Focke P, Wang H, Sellin I A and Lindle D W 2001, Phys. Rev. A **64** 022507.

[2] Johnson W R and Cheng K T 2001 Phys. Rev. A **63** 022504.

[3] Ricz S, Sankari R, Kover A, Jurvansuu M, Varga D, Nikkinen J, Ricsoka T, Aksela H, and Aksela S 2003 Phys. Rev. A **67** 012712. Sankari R, Ricz S, Kover A, Jurvansuu M, Varga D, Nikkinen J, Ricsoka T, Aksela H, and Aksela S 2004 Program and Abstracts, *14th International Conference on Vacuum Ultraviolet Radiation Physics*, Th-Po-34 (pg. 215) Cairns, Australia, July 19 – 23.

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