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Structure generated by interchannel coupling in high-energy photoionization W. DRUBE, T.M. GREHK, S. THIESS, DESY, G.B. PRADHAN, IIT-Madras, H.R. VARMA, IIT-Mandi, P.C. DESHMUKH, IIT-Madras, S.T. MANSON, Georgia State University, T. ABERG[1], Helsinki University of Technology —
The $3d$ core level photoemission of metallic Ag and In was measured as a function of photon energy over a wide range including the $2p$ ionization thresholds. The intensities of the $3d_{5/2}$ and $3d_{3/2}$ lines were observed to modulate significantly with photon energy, both absolute and relative. The modulation of the photoionization cross section is most pronounced in the vicinity of the $2p$ thresholds, i.e., at photon energies about an order of magnitude above the $3d$ thresholds. Theoretical calculations based on the relativistic-random-phase approximation show that this effect is due to interchannel coupling of the $3d$ photoionization channels with the $2p$ channels affecting the cross section over a wide range of energies. It is argued that this is a general phenomenon in high-energy photoionization throughout the periodic table as well as for molecules, clusters and condensed matter.

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