We have measured [2] the angular distribution of Carbon K-Auger electrons from fixed in space, core-ionized, CO molecules in coincidence with the kinetic energy release of the C\textsuperscript{+} and O\textsuperscript{+} fragments. By plotting the correlation between the measured kinetic energy release and the Auger energy we unveil most of the decay channel (figure 1) which completely overlap in the single Auger spectrum. For each decay channel we than obtain the Auger electron angular distribution in the body fixed frame. We find that as expected the angular distribution is independent on the polarization of the photon creating the K-hole. Our results do not support an earlier study (Guillemin et al [1]) which claimed observation of a breakdown of the two-step model of Auger and photoelectron emission.

We find a dramatic dependence of the angular distribution on the symmetry of the respective decay channel (see figure 2). For a Σ transition we find a flashlight like emission of the Auger electrons into a very narrow cone. On top of this a strong oscillatory diffraction pattern is observed pattern.


References
