

# Symmetries in 3D momentum spectroscopy and extension to coincidence detection of nano ion formations.

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We have developed a 3D velocity map imaging device that can detect electrons in coincidence with ion time-of-flight detection. The detection scheme was applied to enhance dichroic and enantiosensitive measurements with intense elliptically polarized light. In particular, dichroic photoelectron distributions in atoms have been studied systematically for the first time, showing the onset of vortices formation with a single color field in atoms. The same apparatus can be used for studies of strong field ionization of nanoparticles in coincidence with nano ions. The detection of nano ions presents a new challenge which for which the TimePix camera seems to be well suited.