Contribution ID: **39** Type: **Poster**

Attosecond delays in the photoemission from the layered, centrosymmetric Bi2Te3 and non-centrosymmetric BiTeCl crystals

Wednesday 14 February 2018 17:00 (2 hours)

Attosecond time-resolved photoemission based on the photoelectron streaking in a time-correlated strong IR field allows investigating temporal delays in the photoemission from different initial states with unprecedented resolution [1]. The physical origin of these delays is not yet fully understood and various theoretical models coexist demonstrating our still limited understanding of the fundamentals of the photoemission process.

Here we report on attosecond time-resolved photoemission from the layered crystals Bi2Te3 and non-centrosymmetric BiTeCl. For the latter the lack of inversion symmetry allows studying relative photoemission delays for differently terminated but well-defined and inert surfaces. In addition, photoelectron propagation effects such as the inelastic mean free path can be determined experimentally because of the reversed layer stacking for differently terminated surfaces. This reduces the ambiguities for classical electron trajectory calculations performed to model the observed relative photoemission delays. However, electron propagation alone cannot explain the measured relative delays. Taking into account local atomic effects and many body corrections reduce the discrepancy between experimental observations and theoretical predictions but still yield no satisfactory explanation. This shows that additional mechanism in the photoemission process significantly influence the photoelectron dynamic and hence a refined model of photoemission is needed.

[1] A. L. Cavalieri, et al., Nature 449, 1029 (2007)

Primary author: NEB, Sergej (University of Bielefeld)

Presenter: NEB, Sergej (University of Bielefeld)

Session Classification: Poster session 1

Track Classification: Poster