Abstract Submitted
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Strong-field-ionization photoelectron imaging of metal nanoparticles [1] ERFAN SAYDANZAD, Kansas State University, JIANXIONG LI, Lousiana State University, JEFFREY POWELL, INRS-EMT, ADAM SUMMERS, ICFO, SEYYED JAVAD ROBATJAZI, Kansas State University, PHILIPP RUPP RUPP, Ludwig-Maximilians-University, CHRISTOPHER M. SORENSEN, DANIEL ROLLES, Kansas State University, MATTHIAS F. KLING, Ludwig-Maximilians-University, CARLOS TRALLERO-HERRERO , University of Connnecticut, ARTEM RUDENKO, UWE THUMM, Kansas State University — We modeled strong-field ionization from metal nanoparticles by extending our classical-trajectory-sampling approach [1]. Our numerical model includes (i) photoelectron emission on the surface of the nanoparticle by an intense IR laser pulse and (ii) photoelectron propagation outside the nanosphere in the presence of the incident laser and induced plasmonic fields. It accountes for electron-electron- and electron-residual charge interactions and for electron rescattering at the nanoparticle surface. Based on simulated photoelectron-momentum distributions for 10 to 70 nm diameter gold nanospheres and three different intensities, and in comparison with measured velocity-map-image (VMI) photoelectron spectra [2], we scrutinize the effects of electronic correlation, induced plasmonic fields, and electron-residual charge interactions. [1] E. Saydanzad, J. Li, and U. Thumm, Phys. Rev. A 95, 053406 (2017). [2] J. Powell et al., Optics Express 27, 27124 (2019).

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Uwe Thumm
Kansas State Univ

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