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Induced Single-Photon ionization Transparency RISHI PANDIT, KASEY BARRINGTON, ZACHARY HARTWICK, EDWARD ACKAD, Southern Illinois University, Edwardsville, IL — Induced single-photon ionization transparency is studied by using a hybrid quantum-classical model, tracking and moving each particle using molecular dynamics. Two short XUV pulses interact with the cluster which cause negligible inverse bremsstrahlung heating. The first pulse is of sufficient intensity, forming a warm-dense nanoplasma in the cluster, that it completely saturates the single-photon ionization channel. A second XUV pulse at the same wavelength then probe the cluster to test if the channel is actually saturated. If enhanced photo-ionization mechanisms contribute significantly to the ionization of the cluster, then the second pulse will create a significant change in the ionization of the cluster. Otherwise, the second XUV pulse will not interact with the cluster. Measuring the time-of-flight ion signal, the kinetic energy distribution of the ions and electrons, allows us to distinguish between saturated versus unsaturated single-photon ionization channel. In either case, an enhancement will be seen due to there being clusters not interacting with the spatial peak of the pulse and thus not saturating from the first pulse. This will be accounted for in the model, allowing for the determination of the role enhanced photo-ionization plays in XUV-cluster interactions.

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