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LSP modeling of ultra-intense lasers on cone-coupled wire targets: effect of cone thickness[1] CHRIS ORBAN, VLADIMIR OVICHINNIKOV, KRAMER AKLI, The Ohio State University, Department of Physics, Columbus, OH 43210, USA, ANTHONY LINK, Lawrence Livermore National Laboratory, Livermore, CA 94550, USA, DOUGLASS SCHUMACHER, RICHARD FREEMAN, The Ohio State University, Department of Physics, Columbus, OH 43210, USA — Experiments with ultra-intense laser pulses incident on cone-coupled wire targets can potentially yield valuable information on the physics relevant to the fast ignition fusion regime. Using the Particle-In-Cell code LSP, we present simulations with fully consistent laser E & B fields and over 60 million fully kinetic particles designed to model mm-scale cone-wire experiments conducted with the Titan laser at LLNL. Focusing on Cu K_α x-ray line emission – an informative diagnostic of the population of hot electrons – we investigate and explain the strong experimental trend that the irradiation of thicker cones produces fewer Cu K_α photons. Comparison to other studies and implications for the feasibility of the fast ignition fusion concept are discussed.

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