Fully Differential Cross Sections in Two-Photon Double Ionization of Helium DANIEL HORNER, Theoretical Division, Los Alamos National Laboratory, THOMAS RESCIGNO, Chemical Sciences, Lawrence Berkeley National Laboratory, C. WILLIAM MCCURDY, Chemical Sciences, Lawrence Berkeley National Laboratory; Applied Science and Chemistry, U. California, Davis — We present total, single differential, and triple differential cross sections for two-photon double ionization of helium above and below the threshold for sequential ionization (54.4 eV). Sequential double ionization exhibits characteristic behavior seen in the total and differential cross sections. Evidence of this behavior also arises below the threshold through "virtual sequential ionization." Using the method of exterior complex scaling, we compute numerically converged wave functions describing two unbound electrons on a large, but finite volume. From these wave functions, using formally exact integral methods, we extract ionization amplitudes, from which we compute the observable cross sections.

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