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Single and double photoionization of atoms by n-photon absorption at low intensity laser fields: a Generalized Sturmian approach JUAN M. RANDAZZO, FLAVIO D. COLAVECCHIA, Centro Atomico Bariloche, Argentina, GUSTAVO GASANEO, Universidad Nacional del Sur, Bahia Blanca, Argentina, DARIO M. MITNIK, IAFE, Buenos Aires, Argentina, LORENZO UGO ANCARANI, Universite de Lorraine, Metz, France — We apply the Generalized Sturmian approach for the study of single and double photoionization of atoms by n-photon absorption at low intensity laser fields. We start with the double photoionization of helium by absorption of a single photon. The three-body wave functions necessary for the calculations (the ground state of the helium atom, and the scattering wave function which contains the post-collisional dynamics after one photon absorption) are both expanded with spherical Generalized Sturmian Functions (GSF) [1]. Very accurate triple differential cross sections for single photon double ionization are obtained helium for 20 and 40 eV. If two or more photons are absorbed, we have to consider the corresponding wave functions which describe the spatial distribution in each stage. We will then consider the scattering solutions for n¿1 analyzing the applicability of an iterative scheme with a focus on the computational requirements for each n.

[1] G. Gasaneo et al, Adv. Quantum Chem., 67, 153 (2013)

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