

Abstract Submitted
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Quasi Sturmian basis in two-electron continuum Coulomb problems LORENZO UGO ANCARANI, Universite de Lorraine, France, A.S. ZAYTSEV, M.S. ALESHIN, S.A. ZAYTSEV, Pacific National University, Khabarovsk, Russia — A new type of basis functions is proposed to describe a two-electron continuum which arises as a final state in electron-impact ionization and double photoionization of atomic systems. These two-particle basis functions are obtained, by analogy with the Green's function of two non-interacting hydrogenic atomic systems, as a (complex energy plane) convolution integral of two one-particle Quasi Sturmian functions [1]. We name these functions Convolutated Quasi Sturmian functions (CQS). By construction, a CQS function (unlike a simple product of two one-particle ones) behaves like a six-dimensional outgoing spherical wave when the hyperradius goes to infinity. This important property should be useful when solving three-body Coulomb scattering problems. It is the purpose of this contribution to explore the effectiveness of such CQS as a basis set.

[1] J. A. Del Punta, M. J. Ambrosio, G. Gasaneo, S. A. Zaytsev and L. U. Ancarani 2014 J. Math. Phys. 55, 052101.

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