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**Introducing a phase factor for the two-electron continuum representation** LORENZO UGO ANCARANI, Universite de Lorraine, Metz, France, A.S. ZAYTSEV, S.A. ZAYTSEV, Pacific National University, Khabarovsk, Russia — We propose a numerical approach to describe three-body Coulomb continuum wave functions in the entire space. The key idea is to use an expansion on a basis set of functions whose asymptotic behavior is as close as possible to the formal one in the $\Omega_0$ region where all interparticle distances are large. The proposed basis set contains two ingredients. First, it uses two-particle functions, named Convoluted Quasi Sturmian (CQS) [1]. While these behave asymptotically as a six-dimensional outgoing (incoming) spherical wave, they miss out an important Coulomb logarithmic phase which corresponds to the interelectronic potential; truncated expansions on CQS functions failed to converge satisfactorily with increasing basis size [1]. This brings us to the second ingredient, which consists in introducing – from the outset – an appropriate phase factor into the basis set. These dressed CQS functions possess then an asymptotic behavior closer to the formal one, and one then obtains a satisfactory convergence of the partial transition amplitudes on a basis set of reasonable size. Choosing a suitable phase factor, we demonstrate this numerically for the two-electron continuum that occurs, for example, in the electron-impact double ionization of helium; we consider typical experimental kinematical conditions in which two electrons escape with 10 eV each. [1] Zaytsev A S, Ancarani L U and Zaytsev S A, Eur. Phys. J. Plus 131, 48 (2016). [2] Zaytsev A S, Ancarani L U and Zaytsev S A, Eur. Phys. D, in press (2017).

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