Semiclassical Green's function for electron motion in combined Coulomb and electric fields[1] HARINDRANATH AMBALAMPITIYA, ILYA FABRIKANT, Univ of Nebraska - Lincoln — We are developing an extension of the Green-function approach[1] to the theory of ionization of a multielectron atom in a strong laser field by using the semiclassical Van Vleck-Gutzwiller propagator. For a static field the exact quantum mechanical Green's function can be calculated with an arbitrary accuracy. Therefore, as a first step towards solution of the problem, we apply the semiclassical method to the static field case for the energies above the ionization threshold where all classical trajectories contributing to the Green's function are real. Required trajectories are determined by solving the problem of finding initial velocity and traveling time corresponding to two position points. For the pure electric field case of two trajectories the semiclassical Green's function agrees very well with the exact Green's function. With the inclusion of the Coulomb field, the number of classical trajectories between two points grows rapidly and here we observe that the agreement between the semiclassical and exact Green's functions increases when more trajectories are included in the computation. [1]I. I. Fabrikant and L. B. Zhao, Phys. Rev. A **91**, 053412 (2015).

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