

Elementary Many-Particle Processes in an Electric Microfield, Clearly Depended on Plasma Non-ideality

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Abstract

The effect of electric plasma microfield on elementary many-body processes in plasmas, clearly depended on plasma non-ideality, is considered. It is demonstrated that the processes of tunnel ionization by laser fields as well as the process of electron collisional ionization may be strongly influenced by the electric microfields especially in the non-ideal plasma. It is shown also that there are regions of non-ideal plasma densities and temperatures, where the rate of nuclear fusion is accelerated by the electric microfields. This effect may be relevant for nuclear processes in stars. Finally, the three-body recombination via the highly excited states is strongly influenced by an electric microfield and locked in the non-ideal plasma.

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