
Features of fusion reactions at accelerated deuterons collisions in plasma

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The article considers a possibility of obtaining neutrons high yield from deuterium plasma in the significant fast particles population. We expect to maintain high proportion of fast deuterons with a powerful deuterium neutral atom beam. The nuclear fusion reactions rate in deuterium increases on the order in comparison with Maxwell plasma, and the requirements for such plasma magnetic confinement system parameters are reduced. The reaction rate estimations take into account deuterium nuclei non-equilibrium distribution function in velocity. We show that in order to achieve the gain in the plasma $Q = 1$ the injected deuterium atoms energy should be about 2 MeV. We can consider the system with $Q = 1$ on the deuterium as thermonuclear neutrons source for advanced hybrid power systems such as "synthesis-division". The advantage of this approach is in no need of tritium using.

Keywords: deuterium, fast neutrons, plasma fusion, injection heating, hybrid system "synthesis-division".

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