

On plasma oscillatory confinement under DD and proton-boron fusion

Kurilenkov Yu K^{1,2,®}, Oginov A V², Tarakanov V P¹, Gus'kov S Yu² and Samoylov I S¹

¹ Joint Institute for High Temperatures of the Russian Academy of Sciences, Izhorskaya 13 Bldg 2, Moscow 125412, Russia

² Lebedev Physical Institute of the Russian Academy of Sciences, Leninsky Avenue 53, Moscow 119991, Russia

® kurilenkovyuri@gmail.com

To increase the efficiency of fusion in the inertial electrostatic confinement (IEC) scheme, it was proposed to inject electrons into the anode space to create a deep potential well (PW), and proceed to the regime of periodically oscillating plasma spheres (POPS) [1]. However, despite the successful demonstration of the advanced POPS scheme for H_2^+ , He^+ , and Ne^+ , it failed to implement the original POPS concept in further experiments on fusion [2]. Over time, it became clear that certain hopes associated with the potential advantages of POPS, can be realized in a IEC scheme with reverse polarity based on miniature nanosecond vacuum discharge (NVD) (see [3] and Refs therein). At the collapses of oscillating ions at PW “bottom”, both DD and aneutronic $p + {}^{11}B$ nuclear synthesis are taking place [3,4]. This type of confinement in NVD was referred to as oscillatory one [4]. Further, the features and specifics of oscillatory confinement in NVD are discussed in the report presented.

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