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Periodically Oscillating Plasma Sphere (POPS) and Neutron Source Development at LANL[1] JAEYOUNG PARK, RICHARD NEBEL, ROBERT ARAGONEZ, EVSTATI EVSTATIEV, Los Alamos National Laboratory, BENJAMIN YEE, University of Michigan, YONG SEOK HWANG, Seoul National University — The inertial electrostatic confinement (IEC) device provides a favorable development path for fusion applications. It is a compact device that is easy to construct and operate. It is also straightforward to accelerate the ions to fusion relevant energy. Though the existing IEC device typically operates with relatively low efficiency, there are several promising near-term fusion applications such as nuclear assay. We will discuss about the on-going LANL research efforts using IEC based neutron generators for nuclear assay applications. Neutron yields of $\sim 10^6$ neutrons/s per kw input power have been demonstrated using D-D fuels. An inductively coupled plasma source has been installed to enhance the neutron yield. Separately, we will discuss about the current status of periodically oscillating plasma sphere (POPS) experiment. The POPS research is aimed at achieving fusion energy production based on the novel plasma heating concept proposed by Nebel and Barnes[1]. POPS oscillation has been verified experimentally and an electron beam probe is being developed in order to measure the POPS compression and heating. 1. R. A. Nebel, D. C. Barnes, Fusion Technology 38, 28 (1998).

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