

Abstract Submitted
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Gas Dynamic Trap Neutron Source (DTNS) – applications and development path¹ A.W. MOLVIK, T.C. SIMONEN, ORAU, D.D. RYUTOV, LLNL — The successes in the Gas Dynamic Trap at the Budker Institute of Nuclear Physics – stable operation to $\beta \sim 60\%$, T_e increasing with neutral beam power to >200 eV, and classical behavior of hot ions (Ivanov and Beklemishev, this conf.) – motivate building a DTNS. The DTNS provides ~ 2 MW/m² neutron flux, and 20 l irradiated volume (in a 2.5 cm thick annulus) to enable aggressive programs in fusion materials development, tritium-breeding blankets (which do not have to breed initially because the DTNS burns less than 200 g/yr of T), and hybrid fission blankets. The major issue is steady-state operation of a configuration that has been demonstrated during 5 ms pulses. The known issues are all engineering: cooling components impinged by beams, pumping the gas and regenerating the pumps. Possible plasma physics issues, such as drift waves, are expected to have slow growth times enabling suppression or saturation at low levels.

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