

Abstract Submitted
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Gas Dynamic Trap Neutron Source (DTNS) – a key to fusion energy¹ ARTHUR MOLVIK, THOMAS SIMONEN, ORAU, DMITRI RYUTOV, LLNL — The DTNS is based on the Gas Dynamic Trap at the Budker Institute of Nuclear Physics – which has 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.). The DTNS provides ~ 2 MW/m² neutron flux in a 2.5 cm thick annular 20 l irradiated volume 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. Together with the present OFES plasma science program, this would form an aggressive fusion energy program. 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. Any plasma physics issues, which appear on longer time scales, can be suppressed to low levels.

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