Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

The GDT-based 14MeV neutron source for fission fuel systems
ALEXANDER IVANOV, Budker Institute of Nuclear Physics, Novosibirsk, BUDKER INSTITUTE OF NUCLEAR PHYSICS, NOVOSIBIRSK TEAM — The gas dynamic trap (GDT) is an axisymmetric mirror device with a high mirror ratio and with a mirror to mirror length exceeding a mean free path for the ion scattering into loss cone. A version of GDT with multi-component plasma was proposed for generation of high D-T neutron flux in localized zones to serve the needs of fusion material tests [1]. Conceptual studies demonstrated that the D-T neutron flux would reach $\sim$2MW/m^2 in these zones if the device consumes 60MW. This approach can only be realized if the high beta plasma in the GDT with anisotropic fast ions is stable against MHD and kinetic instabilities. This has been already proven both theoretically and experimentally. Recently, application of the GDT neutron source as a driver for a fission –fusion hybrid and minor actinides burner was considered. This requires certain modifications to be introduced into the initial approach, since then overall efficiency of the driver becomes important. These physical and technical modifications are discussed in the paper.

[1] I.A.Kotelnikov,V.V.Mirnov, V.P.Nagorny, D.D.Ryutov, In: Plasma Phys. Controll. Fusion Res., **2,** IAEA, Vienna, p.309, 1985

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Date submitted: 18 Jul 2009 Electronic form version 1.4