On the possibility of neutron yield enhancement in fusion targets at laser energy ~ 1 MJ.

I.G. Lebo, A.I. Lebo
Moscow State Technical University of Radioengineering, Electronics and Automation
Moscow, Russia
lebo@mirea.ru

We propose a conceptual design of thermonuclear laser target for obtainment of large neutron yield from compressed DT plasma. The best relation of neutron yield to absorbed laser energy (Y/Elas) has been achieved with help of gas filled shell targets at OMEGA facility (USA) about ten years ago. But a parameter of (ρR) of compressed fuel is rather small in such targets. As the consequence α-particles leave out DT plasma without deceleration. The layer of low density foam matter between inertial shell and DT fuel could produce the development of plasma curls and magnetic field generation [1, 2]. It allows to increase a proportion of energy, which α-particles pass on thermal ions of DT plasma. The numerical simulations illustrate this effect. The neutron yield up to $10^{17}$ could be obtained at laser pulse energy ~ 1 MJ.
