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Double plasma layers for backward Raman compression GENNADIY FRAIMAN, ALEXEY BALAKIN, Institute of Applied Physics RAS, Russia, NATHANIEL FISCH, Princeton University — The possibility to suppress perturbations of the phase and the amplitude profiles of amplified pulse at fast backward Raman compression in inhomogeneous plasma is proposed. The method is based on using two-stage backward Raman amplification in plasma. At the first stage, the usual backward Raman compression takes place, which transfers energy from a long pump pulse to a short seed pulse [1]. In inhomogeneous plasma this produces a short intense seed pulse with strong transverse modulation of its phase profile. At the second stage, this short intense pulse is used as a pump for backward Raman amplification of the same seed, which has homogeneous transverse phase profile at the beginning. What is important is that for the second stage we can use plasma layer with very small length, where inhomogeneities of plasma density are weak. This two-stage scheme allows achieving the efficiency of compression of about 60% in energy.

[1] V. M. Malkin, G. Shvets, N. J. Fisch, Phys. Plasmas **7**, 2232 (2000).

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