

Numerical studies of beam smoothing methods and its influence on filamentation instability

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Large scale filamentation instability in Hohlraum is investigated by a three dimensional parallel laser plasma simulation code LAP3D [1] developed at IAPCM. The focus lies on how to controlling the instability by spatial and temporal smoothing methods [2], respectively.

Spatial smoothing method is illustrated by propagation of a beam smoothed by the continuous phase plate (CPP) , the research of which includes as follows: 1) features of filamentation instability when it develops [3] ; 2) the threshold of the instability for a CPP beam; 3) influence of distribution of strong speckles on the instability; 4) conditions for the onset of the beam deflection [4].

Spatial smoothing method is illustrated by propagation of a beam smoothed by the spectral dispersion smoothing (SSD), the research of which includes as follows: 1) influence of modulated frequency on the beam propagation [5]; 2) the threshold of filamentation instability for such a beam.

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