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To reduce the fast electrons preheating effect by changing launch time of the spike pulse in shock ignition approach

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Target characteristic parameters in shock ignition approach before launching the spike pulse are studied using a 1-D hydrodynamic simulation code. By delaying the spike launch time, the shell areal density, ρR, is increased. The enhanced shell areal density prevents the hot electrons preheating of main fuel which in turn is generated from the intense laser plasma interaction with corona. To consider the effect of the spike launch time on the target performance, the target gain for a wide range of spike powers and launch times are computed. It is noticed that for HiPER reference target, few tenth nanoseconds displacement of spike launch time increases the areal density, ρR, value up to 30-70 percent. Furthermore, by choosing an appropriate spike energy and peak power, the optimum target gain is achieved in which the total driver energy is reduced.

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Study of the first fission barrier of ^{252}Cf by the method conserving number of nucleons

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Our study starts with a presentation of the formalism HTDA (Higher-Tamm-Dancoff- approximation). This approximation based on the excitations particle-hole allows the conservation particles number in a mean field, using the base of the axial harmonic oscillator one will describe configurations of scission and can plot the curves of deformation energy obtained by approach HTDA). A very detailed attention will be related to code HTDA with axial symmetry which one will extend so as to be able to include in the base of decomposition of the individual functions of wave of the polynomials more adapt that those of Hermit and also will be wide with the form not symmetry of reflection right-hand side-left by breaking the symmetry of parity. The second fission barriers of the heavy nucleus ^{252}Cf and ^{230}Th will be calculated and compared with the experimental data available. This work, will offer interesting prospects, calling certain improvements or extensions of code HTDA. One makes a comparison to the experimental results. As it appears, our microscopic approach of the average field including the correlations of pairing by preserving the number of particles provides a satisfactory description the heights of the fission barriers of the ^{252}Cf.

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