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Effects on Implosion Characteristics of High-Z Dopant Profiles in ICF Ignition Capsule Ablators[1] YONGSHENG LI, MIN WANG, JIANFA GU, SHIYANG ZOU, DONGGUO KANG, WENHUA YE, Institute of Applied Physics and Computational Mathematics, Beijing 100094, China, WEIYAN ZHANG, China Academy of Engineering Physics, Mianyang 621900, Sichuan Province, China — For ignition target design (ITD) of indirect drive ICF [J. Lindl, PoP 2, 3933(1995)], high-Z dopants in capsule ablators were used to prevent preheat of DTadjacentablators by Au M-band flux in laser-driven gold Hohlraums, therefore to restrain the growth of high-mode hydro-instabilities and to improve the targetrobustness.Based on NIC's Rev. 5 ITD[S. W. Haan et al., PoP 18, 051001(2011)], we investigated the effect of thickness and dopant concentration of doped layers on implosion characteristics, including the Atwood number (AWN) of fuel-ablator interface, the density gradient scale length (DGSL) of ablation front and the implosion velocity (VIM); all three variables decrease with increment of dopant dosage, and increase with dopant concentration while keeping dosage constant. Since a smaller AWN, a larger DGSL, and a faster VIM always characterize a more robust ITD, one should make tradeoff among them by adjusting the dopant profiles in ablators.A Gaussian spectrum (GS) was used to imitate the Au M-band flux [Y. S. Li et al., PoP 18, 022701(2011)], and the impact of GScenter on implosion characteristics of Rev. 5 ITD was studied while moving the GScenter towards higher energy, the ablatorpreheat got severe, AWN got larger, DGSL got larger, and VIM got faster.

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