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Effect of slow energy releasing on divergent detonation of Insensitive High Explosives XIAOMIAN HU, HAO PAN, YONG HUANG, ZIHUI WU, National Key Laboratory of Computional Physics, Insititute of Applied Physics and Computional Mathmatics, Beijing, China 100088 — There exists a slow energy releasing (SER) process in the slow reaction zone located behind the detonation wave due to the carbon cluster in the detonation products of Insensitive High Explosives (IHEs), and the process will affect the divergent detonation wave's propagation and the driving process of the explosives. To study the potential effect, a new artificial burn model including the SER process based on the programmed burn model is proposed in the paper. Quasi-steady analysis of the new model indicates that the nonlinearity of the detonation speed as a function of front curvature owes to the significant change of the reaction rate and the reaction zone length at the sonic state. What's more, in simulating the detonation of IHE JB-9014, the new model including the slow reaction can predict a slower jump-off velocity, in good agreement with the result of the test.

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