

Abstract Submitted
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Modeling nuclear explosion JEREMY REDD, ALEXANDER PANIN,
Utah Valley University — As a result of the Nuclear Test Ban Treaty, no nuclear explosion tests have been performed by the US since 1992. This appreciably limits valuable experimental data needed for improvement of existing weapons and development of new ones, as well as for use of nuclear devices in non-military applications (such as making underground oil reservoirs or compressed air energy storages). This in turn increases the value of numerical modeling of nuclear explosions and of their effects on the environment. We develop numerical codes simulating fission chain reactions in a supercritical U and Pu core and the dynamics of the subsequent expansion of generated hot plasma in order to better understand the impact of such explosions on their surroundings. The results of our simulations (of both above ground and underground explosions) of various energy yields are presented.

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