

Abstract Submitted
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Using the Pagosa SURF model to simulate fragment impact on energetic materials for safety applications¹ XIA MA, BRAD CLEMENTS, Los Alamos National Laboratory — The Scaled Uniform Reactive Front (SURF) model, which is an HE reactive burn model, has been shown to accurately model plate impact experiments with a minimal number of parameters. We have implemented SURF, developed by Menikoff and Shaw, into LANL's Eulerian code Pagosa. It is suitable for high speed impact and captures the entire Shock-to-Detonation (SDT) process, including that observed with short shocks. SURF is able to capture short shocks and dead zones, which is critical for fragment impact simulations. Burn models like Forest Fire, which was used in Pagosa before SURF was implemented, cannot accurately predict dead zones. Pagosa SURF has then been shown to successfully model ball and fragment impacts on energetic materials. These successes support the notion that Pagosa SURF will be a reliable tool for a number of safety assessments. SURF is based on the physics of hotspots. Hot spots are triggered by the lead shock which naturally accounts for shock desensitization. SURF model uses the Hugoniot function to detect the leading shock. We will discuss the model and its implementation in Pagosa in our presentation.

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