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Thermal response of PETN in the function of Exploding Bridgewire Detonators BRYAN HENSON, LAURA SMILOWITZ, Los Alamos National Laboratory — We have recently produced a family of chemical decomposition models applicable to the thermal response of secondary explosives. In this talk we present applications of this model to the response of porous PETN in the function of exploding bridgewire detonators. In experiments fielding a suite of x-ray radiographic, visible imaging and internal sensors we observe an initial thermal response spatially coincident with and preceding what will be the apparent center of initiation of detonation in these devices. This initial response is observed in the infrared, but not in the visible. We show that an initial thermal response of the PETN powder to the vaporizing bridgewire is consistent with the subsequent very prompt evolution to initiation and detonation.

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