A Simple Model for the Pressure field from a Distribution of Hotspots BRIAN LAMBOURN, HEATHER LACY, CAROLINE HANDLEY, AWE — At the APS SCCM in 2009, Hill, Zimmerman and Nichols showed how, assuming that burn fronts propagate at constant speed from individual point hotspots distributed randomly in a volume, the reaction rate history could then be determined. In this paper a simple analytic approximation is found for the time history of the pressure in the volume. Using acoustic theory, the time history of the pressure field for burning from a single spherical, isolated hotspot of finite radius is developed. Then at any point in the volume, the overall pressure history is determined from the sum of the pressure fields from all the individual hotspots. The results are shown to be in qualitative agreement with full mesoscale calculations of the reaction and burning from a finite size spherical hotspot.

Brian Lambourn
AWE

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