

Abstract Submitted
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Burning Crack Networks in Cook-off Explosions LARRY HILL, Los Alamos National Laboratory — Burning crack networks can play an important role in cook-off explosions. Combustion gases create pressure, pressure accelerates reaction, and the process runs away. The reaction rate increases with *crack stiffness*, characterized by the pressure required to increase its width. A crack's stiffness is increased by its burning neighbors, which push against it and oppose its growth. I present a simple analysis of this effect, and couple to it a simple burning model to show approximately how combustion runs away. The model compares favorably with the mechanically-confined cook-off experiments of Dickson et al. [1]. [1] Dickson PM, Asay BW, Henson BF, Smilowitz LB (2004) Thermal cook-off response of confined PBX 9501, *Proc. R. Soc. Lond. A* pp. 3447-3455

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