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Power and Energy of Exploding Wires COLE VALANCIUS, Sandia Natl Labs — Exploding wires are used in many high-energy applications, such as initiating explosives. Analysis of gold wire burst in detonator applications has shown Burst Current and Action metrics to be incapable of explaining burst phenomenon as the inductance of a firing circuit is changed. Energy Density better captures the correlation between different wire geometries, different electrical inputs, and explosive initiation. This idea has been expanded upon, to analyze the burst properties in Power-Energy space. Further inconsistencies in the understanding of wire burst and its relation to peak voltage have been found. An argument will be made for redefining the definition of burst. The result is a more broad understanding of rapid metal phase transition and the physical applications of the released shock wave.

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