

Abstract Submitted
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Standing Shock Regulates Sparks in Explosive Flows¹ JENS VON DER LINDEN, LLNL, CLARE KIMBLIN, IAN MCKENNA, Special Technologies Laboratory, SKYLER BAGLEY, RYAN HOUIM, University of Florida, CHRIS KUENY, ALLEN KUHL, DAVE GROTE, MARK CONVERSE, LLNL, CARON VOSSEN, SOENKE STERN, CORRADO CIMARELLI, Ludwig Maximilian University, JASON SEARS, LLNL — Recent observations of explosive events in nature [1] and decompression experiments [2] indicate that explosive flows may alter electrical discharge processes, suppressing parts of the hierarchy of the discharge phenomena, such as leaders. In the experiments, a shock tube ejects a flow of gas and particles into an expansion chamber. We imaged an illuminated plume from a decompression of argon and a small amount of diamond particles and performed simulations. The discharges occur below the sharp boundary of a condensation cloud that agrees closely with a Mach disk shock in shape and height. This represents direct evidence that the spatial and temporal scale of the discharges transmit an impression of the shock tube flow, a connection that could enable novel instrumentation to diagnose currently inaccessible supersonic granular phenomena. [1] Behnke, S. A., et al. (2018). *J. Geophys. Res. Atmos.*, 123(8). [2] Mndez-Harper, J. S. et al. (2018). *Geophys. Res. Lett.*, 45(14).

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