

Abstract Submitted  
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**Self-Organization in Hypersonic Shock Driven Plasmas**<sup>1</sup> KYRON WILLIAMS, A.B. ALEXANDER, Florida A&M University/CEPAST, M. SCOTT, J. BUCHANAN, Florida A&M University, J.A. JOHNSON III<sup>2</sup>, Florida A&M University/CEPAST — Evidence has been found using the arc-driven shock tube of self-induced Stark effect lines due to the production of hypersonic shock waves. We take advantage of high time resolution measurements of optical spectral lines. In addition, previous work also indicated a possible means to determine the time evolution of the internal EM field geometry on short time scales (less than 250 microseconds). Further examination of hypersonic argon and krypton plasmas using a phase transition model indicates preliminary evidence of local plasma self-organization and collective behavior. The determination of the system complexity from turbulence analysis also sheds insight into the interaction of hypersonic turbulent plasmas with external magnetic fields.

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