1116-65-942 **David C Seal*** (seal@usna.edu), 121 Blake Road, Annapolis, MD 21402, and **Scott A Moe** and **James A Rossmanith**. *A simple and effective arbitrary-order shock-capturing limiter for discontinuous Galerkin methods.*

Hyperbolic PDEs often contain shocks and discontinuities in the exact solution, and therefore numerical methods need to be tailored to address this issue. Moreover, the application of high-order numerical methods (that are able to resolve more features with fewer unknowns) exacerbates this issue given that the appearance of Gibb's phenomenon at the location of the discontinuity can lead to non-linear instabilities and failure of the numerical method to produce a solution. In this work, we present a novel shock capturing limiter for the high-order discontinuous Galerkin (DG) method. Our limiter constructs local upper and lower bounds for the solution by sampling nearest neighbors, and then limits the solution to stay within these bounds. It is simple to implement, has minimal communication, is effective at capturing shocks, and retains genuine high-order accuracy of the solution in smooth regimes. Numerical results including problems that require positivity preservation in one and two dimensions on structured and unstructured grids are presented that indicate the robustness of the method. (Received September 21, 2015)