1135-65-476 **Jesse Chan*** (jesse.chan@rice.edu). *Discretely entropy stable discontinuous Galerkin methods.*

High order methods offer several advantages in the approximation of solutions to hyperbolic equations, such as improved accuracy and low numerical dispersion and dissipation. However, high order methods also tend to suffer instabilities when applied to nonlinear hyperbolic equations, requiring filtering, limiting, or artificial dissipation to ensure that the solution does not grow unboundedly. At the root of these problems is the fact that the stability of the continuous problem does not imply stability at the discrete level. This talk will review the development of high order collocation schemes based on summation-by-parts operators which recover a discrete statement of entropy stability, and will discuss the extension of such methods to a more general class of discontinuous Galerkin methods. Numerical results for the compressible Euler equations in one and two dimensions support the presented theoretical results. (Received September 05, 2017)