Title: Development of Entropy Stable TVD and TVB schemes for hyperbolic conservation laws

Abstract: In gas dynamics and related areas, the fluid flow generally modelled by system of hyperbolic conservation laws (HCL). Numerical schemes to solve such equation face some peculiar type of instabilities. Existing numerical schemes are designed to solve the weak form of the HCL and therefore, sometime fail to compute the correct unique solution. Concept of entropy stable schemes were introduced to find the unique physically correct solution. However, an entropy stable scheme produces spurious oscillations near the discontinuity of the solution which make the scheme unstable. Therefore, one needs to invoke other stability condition to the scheme to suppress the spurious oscillations. Commonly known stabilities to ignore the oscillations in computed solution are Total Variation Diminishing (TVD), Total Variation Bounded (TVB) and few more. Construction of Entropy Stable TVD and TVB schemes will be presented. Several choices of entropy stable TVD/ TVB schemes can be seen with numerical results.