1096-65-1180 **Matthew Reyna*** (reynam@rpi.edu), Department of Mathematical Sciences, Amos Eaton 301, 110 8th Street, Troy, NY 12180, and **Fengyan Li** (lif@rpi.edu), Department of Mathematical Sciences, Amos Eaton 301, 110 8th Street, Troy, NY 12180. *On the bounds and time-step restrictions for the DG and central DG spatial operators.* Preliminary report.

It is observed that the central discontinuous Galerkin (DG) method often admits larger time steps than a DG method of the same order of accuracy in simulating hyperbolic conservation laws. To understand this, we start with DG and central DG spatial discretizations for a linear advection equation, and we show that the norm of the DG spatial operator grows quadratically with the order of the method while that of the central DG operator grows only linearly. When these semi-discrete methods are further combined with a locally-stable temporal discretization, we follow Kreiss-Wu's theory and obtain sufficient conditions on the time step to ensure numerical stability. We validate our results numerically, and we also extend them to general linear hyperbolic equations. (Received September 13, 2013)