1135-65-542 **Raju Prasad Bhusal*** (rbhusal@bgsu.edu), rbhusal@bgsu.edu, and **Tong Sun**. *The Error Analysis for the Cubic Front Tracking and RKDG method Solving Scalar Conservation Laws.* Preliminary report.

The error analysis for the Runge-Kutta discontinuous Galerkin (RKDG) method for solving the scalar nonlinear conservation laws for the case of smooth solution has been given in [**?**]. For the case of having a fully developed shock, a Front Tracking method coupled with RKDG has been implemented and analyzed in [**?**]. We use a new Cubic Front Tracking method coupled with RKDG to obtain the solution in-between the cases in [**?**] and [**?**], namely, from the time a shock is starting to form until it is fully developed. Thus we have filled the gap. The numerical smoothness based error analysis of [**?**] and [**?**] remains to be the main approach in our error analysis.

References

[1] Tong Sun and David Rumsey, "Numerical smoothness and error analysis for RKDG on the scalar nonlinear conservation laws". *Jour. of Compu and App Math*, 241(2013):68-83, 2013.

[2] Tong Sun and Adamou Fode," A discontinuous Galerkin- front tracking scheme and its optimal-optimal error estimation." *Jour. of Compu. and App Math*, 292(2016):369-386, 2016.

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