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Joshua Buli*, jbuli001@ucr.edu, and **Yulong Xing**. *A Discontinuous Galerkin Method for the Aw-Rascle Traffic Flow Model on Networks.*

In this talk we consider the second-order Aw-Rascle (AR) model for traffic flow on a network, and propose a discontinuous Galerkin (DG) method for solving the AR system of hyperbolic PDEs with appropriate coupling conditions at the junctions. For the proposed method we apply the Lax-Friedrichs flux, and for comparison, we use the first-order Lighthill-Whitham-Richards (LWR) model with the Godunov flux. Coupling conditions are also required at the junctions of the network for the problem to be well-posed. As the choice of coupling conditions is not unique, we test different coupling conditions for the Aw-Rascle model at the junctions. Numerical examples are provided to demonstrate the high-order accuracy, as well as comparisons between the first-order LWR model and the second-order AR model. The ability of the AR model to capture the capacity drop phenomenon is also explored. (Received August 06, 2018)