1048-65-318 **Alexander Kurganov*** (kurganov@math.tulane.edu), Mathematics Department, Tulane University, 6823 St. Charles Ave., New Orleans, LA 70118. *Non-Oscillatory Central Schemes for Traffic Flow Models with Arrhenius Look-Ahead Dynamics.*

We first develop nonoscillatory central schemes for a traffic flow model with Arrhenius look-ahead dynamics, proposed in [A. Sopasakis and M.A. Katsoulakis, SIAM J. Appl. Math., 66 (2006), pp. 921-944]. This model takes into account interactions of every vehicle with other vehicles ahead ("look-ahead" rule) and can be written as a 1-D scalar conservation law with a global flux, for which no Riemann problem solver is available. The proposed schemes are extensions of the nonoscillatory central schemes that belong to a class of Riemann-problem-solver-free Godunov-type projection-evolution methods, which are especially attractive for the studied traffic flow model. The designed schemes are used to numerically investigate both dispersive and smoothing effects of the global flux.

We also modify the model by Sopasakis and Katsoulakis by introducing a more realistic, linear interaction potential that takes into account the fact that a car's speed is affected more by nearby vehicles than distant (but still visible) ones. The central schemes are extended to the modified model. Our numerical studies clearly suggest that in the case of a good visibility, the new model yields solutions that seem to better correspond to reality. (Received February 10, 2009)