

Joint Event

NUMERICAL METHODS FOR PDES SEMINAR
and
PHYSICAL MATHEMATICS SEMINAR

**Jamitons and the Predictive Accuracy of
Macroscopic Traffic Models**

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ABSTRACT:

Phenomenologically, the macroscopic (i.e., fluid-dynamical) description of vehicular traffic flow is further removed from reality than its microscopic (i.e., vehicle-based) description. It is therefore an important question why one should study macroscopic models. In this talk we demonstrate how the phenomenon of “phantom traffic jams” (the occurrence of traffic waves without any discernable cause) can be understood using an analogy between traffic waves (“jamitons”) and detonation waves. It turns out that the macroscopic description provides fundamental insights into the dynamics of jamitons that goes beyond what is known from the microscopic modeling of the same phenomenon. In addition to the understanding of traffic waves, we demonstrate that second-order models can model inhomogeneities in traffic flow, while remaining within a macroscopic framework. Using real traffic data, we study the predictive accuracy of various data-fitted traffic models and show that the investment into more sophisticated models does pay off.

Wednesday, March 5, 2014

4:30 PM - 5:30 PM

Building E17, Room 128

<http://math.mit.edu/seminars/nmpde/>