

STANFORD PROBABILITY SEMINAR

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Monday, 4 April 2005

4:15pm (Refreshments at 4pm in the 1st Floor Lounge)

Sequoia Hall, Room 200

The Biham-Middleton-Levine Traffic Model

Abstract. Initially a car is placed with probability p at each site of the two-dimensional integer lattice. Each car is equally likely to be East-facing or North-facing, and different sites receive independent assignments. At odd time steps, each North-facing car moves one unit North if there is a vacant site for it to move into. At even time steps, East-facing cars move East in the same way.

Simulations suggest that the model has remarkable self-organising properties, but rigorous results have been notoriously elusive. We make a step towards establishing a phase transition by proving that there is a phase in which traffic is completely jammed.

Joint work with Omer Angel and James B. Martin.