# MPDS Seminar

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## "Formulas and Asymptotics in the Asymmetric Simple Exclusion Process"

October 23, 2008
3:40 - 4:30pm
Surge 268

Abstract: In joint work with Craig A. Tracy we consider the asymmetric simple exclusion process on the integers. Each particle waits exponential time, then with probability p it moves one step to the right if the site is unoccupied, otherwise it stays put; with probability 1-p it moves on e step to the left if the site is unoccupied, otherwise it stays put. For a finite system we use the Bethe Ansatz to obtain a formula for the probability of a given configuration at time t. From this we derive a formula, which extends to some infinite systems, for the probability that a given particle is at a given site at time t. In the case of step initial condition (particles initially at the positive integers) the probability can be expressed in terms of Fredhom determinants. Asymptotic results are obtained using this representation.