

Ferrari, P. A.; Fontes, L. R. G.; Vares, M. E.

The asymmetric simple exclusion model with multiple shocks. (English) Zbl 0971.60099
Ann. Inst. Henri Poincaré, Probab. Stat. 36, No. 2, 109-126 (2000).

The paper deals with the PDE $\partial_t \rho + \gamma \partial_r (\rho(1 - \rho)) = 0$ which describes the hydrodynamical behaviour of the one-dimensional asymmetric exclusion process and where γ is the mean of the jump distribution. The problem which is more especially considered here is the description of the microscopic behaviour of the system at certain discontinuity points (or shock fronts) of the solution of this equation, when the initial distribution has shocks (discontinuities). It is shown that the density converges weakly to a random measure with piecewise constant density while the points of discontinuity depend on these limiting Gaussian variables.

Reviewer: [Guy Jumarie \(Montréal\)](#)

MSC:

- [60K35](#) Interacting random processes; statistical mechanics type models; percolation theory
- [82C22](#) Interacting particle systems in time-dependent statistical mechanics
- [82C24](#) Interface problems; diffusion-limited aggregation in time-dependent statistical mechanics

Cited in 4 Documents

Keywords:

[asymmetric simple exclusion process](#); [dynamical phase transition](#); [shock fluctuations](#)

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