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Stefano OLLA - Diffusive behavior in completely integrable infinite dynamics

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We investigate the macroscopic behaviour of the density fluctuations of a one dimensional dynamics of hard rods with random length. After recentering on the effective velocity the density fluctuations of particles of a given velocity v on the diffusive space-time scaling will evolve driven by a brownian motion with a diffusivity depending on v . This rigid evolution of fluctuations is expected in other completely integrable systems (Box-Ball, Toda Lattice,...), in contrast with the behavior in chaotic dynamics where space-time white noise appears in the evolution equations.

Joint work with Pablo Ferrari (U. Buenos Aires).

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