

## Periodic KPZ fixed point with general initial conditions

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We consider the periodic totally asymmetric simple exclusion process (PTASEP) with a general initial condition, and study its scaling limit in the relaxation time scale, where time and period both tend to infinity. Assuming that the initial condition converges, under suitable rescaling, to a periodic upper-semicontinuous function, we prove the convergence of the space-time multipoint distributions. The limiting functions form a consistent family of finite-dimensional distributions, and hence define the periodic KPZ fixed point with a periodic upper-semicontinuous initial condition. The main technical contribution is a new representation of the initial-condition dependence in the multipoint distribution formula for the PTASEP, expressed in terms of hitting times of geometric random walks; this representation is well suited to asymptotic analysis. This is joint work with Yuchen Liao and Zhipeng Liu.