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Dynamical universality of charged single-file systems and integrable spin chains

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We introduce and discuss dynamical universality of charge fluctuations in charged single-file systems. The full counting statistics of such systems out of equilibrium generically undergoes first and second order dynamical phase transitions, while equilibrium typical fluctuations are given by a universal non-Gaussian distribution. Similar phenomenology of dynamical criticality is observed in equilibrium in the easy axis and isotropic regimes of an integrable spin chain. While the easy axis regime does not satisfy a single-file kinetic constraint, it nevertheless supports the non-Gaussian distribution of the charged single-file universality class. Fluctuations at the isotropic point are also anomalous and distinct from those of the Kardar-Parisi-Zhang universality class.

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