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Integrable differential equations for KPZ fixed point with narrow-wedge initial condition

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The KPZ fixed point is a two-dimensional random field that is the conjectured limit of the height functions of the KPZ universality class for random growth models. The one-point distribution of the KPZ fixed point is the Tracy-Widom distribution which is related to the Painlevel II equation. The equal-time, multi-position distributions are also known to be related to integrable differential equations. We will discuss integrable differential equations for multi-time distributions. We also discuss similar results for the periodic KPZ fixed point.

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