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PAPER: CLASSICAL STATISTICAL MECHANICS, EQUILIBRIUM AND NON-EQUILIBRIUM

# Rotor-router walk on a semi-infinite cylinder

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## Abstract

We study the rotor-router walk with the clockwise ordering of outgoing edges on the semi-infinite cylinder. Imposing uniform conditions on the boundary of the cylinder, we consider growth of the cluster of visited sites and its internal structure. The average width of the surface region of the cluster evolves with time to the stationary value by a scaling law whose parameters are close to the

standard KPZ exponents. We introduce characteristic labels corresponding to closed clockwise contours formed by rotors and show that the sequence of labels has in average an ordered helix structure.

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