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Title:	Order-parameter scaling in fluctuation-dominated phase ordering
Authors:	Kapri, R. (/jspui/browse?type=author&value=Kapri%2C+R.)
Keywords:	Fluctuation Phase ordering Coarse-grained depth Surface evolution,
Issue Date:	2016
Publisher:	American Physical Society
Citation:	Physical Review E, 93(1)
Abstract:	<p>In systems exhibiting fluctuation-dominated phase ordering, a single order parameter does not suffice to characterize the order, and it is necessary to monitor a larger set. For hard-core sliding particles on a fluctuating surface and the related coarse-grained depth (CD) models, this set comprises the long-wavelength Fourier components of the density profile, which capture the breakup and remerging of particle-rich regions. We study both static and dynamic scaling laws obeyed by the Fourier modes <math>Q_m L</math> and find that the mean value obeys the static scaling law <math>(Q_m L) \sim L^{-\phi_f(m/L)}</math> with <math>\phi \approx 2/3</math> and <math>\phi \approx 3/5</math> for Edwards-Wilkinson (EW) and Kardar-Parisi-Zhang (KPZ) surface evolution, respectively, and <math>\phi \approx 3/4</math> for the CD model. The full probability distribution <math>P(Q_m L)</math> exhibits scaling as well. Further, time-dependent correlation functions such as the steady-state autocorrelation and cross-correlations of order-parameter components are scaling functions of <math>t/L^z</math>, where <math>L</math> is the system size and <math>z</math> is the dynamic exponent, with <math>z=2</math> for EW and <math>z=3/2</math> for KPZ surface evolution. In addition we find that the CD model shows temporal intermittency, manifested in the dynamical structure functions of the density and the weak divergence of the flatness as the scaled time approaches 0.</p>
Description:	Only IISERM authors are available in the record.
URI:	<a href="https://journals.aps.org/pre/abstract/10.1103/PhysRevE.93.012117">https://journals.aps.org/pre/abstract/10.1103/PhysRevE.93.012117</a> ( <a href="https://journals.aps.org/pre/abstract/10.1103/PhysRevE.93.012117">https://journals.aps.org/pre/abstract/10.1103/PhysRevE.93.012117</a> ) <a href="http://hdl.handle.net/123456789/2499">http://hdl.handle.net/123456789/2499</a> ( <a href="http://hdl.handle.net/123456789/2499">http://hdl.handle.net/123456789/2499</a> )
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