Cornell University Library

We gratefully acknowledge supp
the Simons Fo
and member ins

**Condensed Matter > Statistical Mechanics**

# Dynamical Inequality in Growth Models

Eytan Katzav, Moshe Schwartz

*(Submitted on 21 Jun 2011 (v1), last revised 5 Sep 2011 (this version, v2))*

A recent exponent inequality is applied to a number of dynamical growth models. Many of the known exponents for models such as the Kardar-Parisi-Zhang (KPZ) equation are shown to be consistent with the inequality. In some cases, such as the Molecular Beam Equation, the situation is more interesting, where the exponents saturate the inequality. As the acid test for the relative strength of four popular approximation schemes we apply the inequality to the exponents obtained for two Non Local KPZ systems. We find that all methods but one, the Self Consistent Expansion, violate the inequality in some regions of parameter space. To further demonstrate the usefulness of the inequality, we apply it to a specific model, which belongs to a family of models in which the inequality becomes an equality. We thus show that the inequality can easily yield results, which otherwise have to rely either on approximations or general beliefs.

| | |
|---|---|
| Comments: | 6 pages, 4 figures |
| Subjects: | **Statistical Mechanics (cond-mat.stat-mech)**; Disordered Systems and Neural Networks (cond-mat.dis-nn); Soft Condensed Matter (cond-mat.soft); Chaotic Dynamics (nlin.CD) |
| Journal reference: | EPL 95, 66003 (2011) |
| DOI: | 10.1209/0295-5075/95/66003 |
| Cite as: | **arXiv:1106.4274 [cond-mat.stat-mech]** |
| | (or **arXiv:1106.4274v2 [cond-mat.stat-mech]** for this version) |

**Submission history**

From: Eytan Katzav [view email]
**[v1]** Tue, 21 Jun 2011 17:25:25 GMT (20kb)
**[v2]** Mon, 5 Sep 2011 11:21:52 GMT (20kb)

*Which authors of this paper are endorsers?*

Link back to: arXiv, form interface, contact.