## **Unstable Nonlocal Interface Dynamics**

M. Nicoli; R. Cuerno Rejado; M. Castro Ponce

## Abstract-

Nonlocal effects occur in many nonequilibrium interfaces, due to diverse physical mechanisms like diffusive, ballistic, or anomalous transport, with examples from flame fronts to thin films. While dimensional analysis describes stable nonlocal interfaces, we show the morphologically unstable condition to be nontrivial. This is the case for a family of stochastic equations of experimental relevance, paradigmatically including the Michelson-Sivashinsky system. For a whole parameter range, the asymptotic dynamics is scale invariant with dimension-independent exponents reflecting a hidden Galilean symmetry. The usual Kardar-Parisi-Zhang nonlinearity, albeit irrelevant in that parameter range, plays a key role in this behavior.

## Index Terms-

Due to copyright restriction we cannot distribute this content on the web. However, clicking on the next link, authors will be able to distribute to you the full version of the paper:

Request full paper to the authors

If you institution has a electronic subscription to Physical Review Letters, you can download the paper from the journal website: Access to the Journal website

## **Citation:**

Nicoli, M.; Cuerno, R.; Castro, M. "Unstable Nonlocal Interface Dynamics", Physical Review Letters, vol.102, no.25, pp.256102-1-256102-4, June, 2009.