Estimation of the Non-Universal Parameters for some discrete growth models belonging to the KPZ class

Ebrahim Daryaei*

Department of Physics, Faculty of Basic Sciences, University of Neyshabur, Neyshabur, Iran

Received: 20.08.2018 Final revised: 22.02.2020 Accepted: 04.05.2020 DOI: 10.22055/JRMBS.2020.15555

Abstract

In this paper, we try to estimate the non-universal parameters of some discrete growth models belonging to the Kardar-Parisi-Zhang (KPZ) universality class in both one and two dimensions. Based on a comprehensive numerical investigation, we obtain these parameters with good accuracy compared to other reports. The most important result of the present paper is the estimation of the nonlinear parameter of the KPZ equation with excellent accuracy. For this purpose, we apply the tilt method as a useful tool to characterize the nonlinearities of their associated equation. We believe this method can be used to ensure that there is a nonlinearity type square height-gradient for others discrete growth models.

Keywords: Growth models, universality class, KPZ equation, growth exponent

* Corresponding Author: daryaei@neyshabur.ac.ir

