Planar percolation with a glimpse of Schramm-Loewner Evolution

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(Submitted on 1 Jul 2011 (v1), last revised 2 Nov 2011 (this version, v2))

In recent years, important progress has been made in the field of two-dimensional statistical physics. One of the most striking achievements is the proof of the Cardy-Smirnov formula: this theorem, together with the introduction of Schramm-Loewner Evolution and techniques developed over the years in percolation, allow precise descriptions of the critical and near-critical regimes of the model. This survey aims to describe the different steps leading to the proof that the infinite-cluster density $\theta(p)$ for site percolation on the triangular lattice behaves like $(p-1/2)_+^{5/36+o(1)}$ when p approaches its critical value $p_c=1/2$.

Comments: Survey based on lectures given in "La Pietra week in Probability", Florence, Italy, 2011. (2011)

Subjects: **Probability (math.PR)**; Statistical Mechanics (cond-mat.stat-mech)

Cite as: **arXiv:1107.0158 [math.PR]**

(or **arXiv:1107.0158v2 [math.PR]** for this version)

Submission history

From: Vincent Beffara [view email]

[v1] Fri, 1 Jul 2011 09:19:15 GMT (451kb)

[v2] Wed, 2 Nov 2011 20:46:23 GMT (1099kb)

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