Statistical Mechanics of Two Dimensional Critical Curves

By
Shahin Rouhani
Physics Department, Sharif University of Technology, Tehran, Iran.

General References:

Specific references have been given in the main text of my lecture notes but for students who like to read reviews on the topics covered in these lectures the following references are suggested:

Critical Phenomena:

- Sornette, D. Critical phenomena in natural sciences: chaos, fractals, self-organization and disorder: concepts and tools. Springer Science & Business Media, 2006.
- Stanley, H. Eugene. "Scaling, universality, and renormalization: Three pillars of modern critical phenomena." Reviews of modern physics 71.2 (1999): S358.

Conformal Field Theory

- Schellekens, A. N. "Introduction to conformal field theory." *Fortschritte der Physik/Progress of Physics* 44.8 (1996): 605-705.
- Francesco, Philippe, Pierre Mathieu, and David Sénéchal. *Conformal field theory*. Springer Science & Business Media, 2012.

The renormalization group

- Goldenfeld, Nigel. Lectures on phase transitions and the renormalization group. CRC Press, 2018.

SLE

- 2D growth processes: SLE and Loewner chains, Michel Bauer and Denis Bernard, arxiv:0602049v1
- SLE for Theoretical Physicists , John Cardy, arxiv: 0503313

Surface growth

- Barabási, A-L., and Harry Eugene Stanley. *Fractal concepts in surface growth*. Cambridge university press, 1995.
- Family, Fereydoon, and Tam s Vicsek. *Dynamics of fractal surfaces*. World Scientific, 1991.

Loop models and conformal loop ensembles

- Duplantier, Bertrand. "Two-dimensional fractal geometry, critical phenomena and conformal invariance." *Physics reports*184.2-4 (1989): 229-257.
- Gruzberg, Ilya A. "Stochastic geometry of critical curves, Schramm–Loewner evolutions and conformal field theory." *Journal of Physics A: Mathematical and General* 39.41 (2006): 12601.