

Invitation to the Minicourse

Introduction to Stochastic Loewner Evolution (SLE)

*** In short:**

Minicourse SLE at Eurandom

part I: Friday Nov. 25, 10:30-16:00 by Wouter Kager (UvA)

part II: Tuesday Dec. 13, 10:30-16:00 by Federico Camia (VU)

*** In detail:**

The Stochastic Loewner Evolution (SLE), or Schramm-Loewner Evolution, is a powerful tool in the study of the scaling limit of critical models in dimension 2. The scaling limit of several such models, i.e., the loop-erased random walk, the uniform spanning tree and site-percolation on the triangular lattice, has now been described rigorously using SLE, which was introduced by Oded Schramm in 1999 and developed substantially by Schramm, Lawler and Werner. Moreover, it is conjectured that the scaling limit of more models, like the self-avoiding walk and Potts and $O(n)$ models, can be described using SLE.

Eurandom hosts a mini course on SLE, where we want to give an introduction to the subject and present major results. The course is intended for a broad probabilistic audience, no a-priori knowledge of complex analysis is required. We plan to meet on two days, with two lectures each day. Depending on interest, further talks can be arranged.

The first meeting is on Friday, November 25, 10:30-12:30 and 14:00-16:00. Our speaker that day is Wouter Kager from the University of Amsterdam. He will explain preliminaries on conformal mapping theory, introduce Stochastic Loewner Evolution motivated by properties of the Ising model, and state major properties of SLE. His lectures will be based on the survey article “A Guide to Stochastic Loewner Evolution and Its Applications” by W. Kager and B. Nienhuis (Journal of Statistical Physics, Vol. 115, Nos. 5/6, June 2004, pages 1149-1229), available at arXiv:math-ph/0312056.

The second meeting is on Tuesday, December 13, 10:30-12:30 and 14:00-16:00. Our speaker that day is Federico Camia from the Vrije Universiteit Amsterdam. In the first lecture, he will present Smirnov’s proof of Cardy’s formula. In the second lecture, he will explain how to go from Cardy’s formula to the convergence of the percolation exploration path to chordal SLE_6 . A complete proof of the convergence can be found in Appendix A of “The Full Scaling Limit of Two-Dimensional Critical Percolation” by F. Camia and C. Newman, available at arXiv:math.PR/0504036.

All lectures will be held at EURANDOM in Eindhoven. Travel directions can be found at <http://www.eurandom.nl/Location.htm>.