

**Math 252B, Topics in Complex Analysis**  
**Winter 2013**  
**Course Information**

**Class Hours:** MWF, 1–1:50pm, MS 5127.

**Instructor:** Mario Bonk

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**Tentative office hours:**

Mo, 11am–12pm,

We, 2pm–3pm,

Th, 1pm–2pm, and by appointment.

**Grading:** There will be a small amount of homework. For passing the course it is necessary to turn in homework regularly. Exceptions will be made for advanced students that already have a thesis advisor.

**Course material:** This class continues Math 252A from Fall 2012, and is the second class in a sequence of three courses that intend to develop the necessary background for an understanding of current research on conformally invariant processes in the plane. This is loosely based on G. Lawler's book with the same title. S. Rohde who will be visiting from the University of Washington will teach the third course in Spring 2013.

The topics covered in 252A were: Koebe's distortion theorem, boundary extensions of conformal maps, kernel convergence, Loewner chains and the Loewner-Kufarev equation, existence results for Loewner chains with applications, variants and special cases of the Loewner equation.

In the beginning of this course we will finish the discussion of the deterministic case of the Loewner equation by looking at the radial and chordal case. We will then give an extensive review of the necessary probabilistic background for the stochastic case. In particular, we will discuss Brownian motion and its relation to the solution of the Dirichlet problem. We will then define the Stochastic Loewner Equation (SLE) and develop the basic properties of this process.