

# Introduction to weighted pluripotential theory

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**Timetable:** 20 hours. Class meets Monday to Friday from 10:30 to 12:30. The first lecture will be on Monday, October 17, 2011, Torre Archimede.

**Course requirements:** One-variable complex analysis and measure theory.

**Examination and grading:** Grading is based on a combination of homework and an examination.

**SSD:** MAT/05 Mathematical Analysis, MAT/08 Numerical Analysis

**Aim:** The course will begin with a quick introduction of potential theory and weighted *potential theory* in the complex plane  $\mathbb{C}$  a study of *subharmonic* functions and will proceed with a discussion of weighted *pluripotential theory* in several complex variables ( $\mathbb{C}^d, d > 1$ ) a study of *plurisubharmonic* functions. We will include techniques and applications to other areas; e.g., approximation theory.

## Course contents:

Each of the following subjects will be roughly the content of one lecture.

1. Subharmonic functions and potential theory in  $\mathbb{C}$
2. Upper envelopes, extremal subharmonic functions, and applications
3. Weighted potential theory in  $\mathbb{C}$
4. Plurisubharmonic functions in  $\mathbb{C}^d, d > 1$
5. Complex Monge-Ampère operator
6. Upper envelopes, extremal plurisubharmonic functions, and applications
7. Transfinite diameter and polynomial interpolation
8. Weighted pluripotential theory in  $\mathbb{C}^d, d > 1$
9. Bergman functions and  $L^2$ -theory
10. Recent results and problem