

# HONOURS SEMINAR

Kian Blanchette

## Conformal mappings and the Koebe Quarter Theorem

Thursday, December 7, 2017

3:00 p.m.

Mathematics and Statistics Lounge, CW307.20

**Abstract:** A conformal mapping is a complex valued function that is both univalent and analytic on a domain. Geometrically, they preserve angles between intersecting lines in the domain. These type of functions have a number of interesting properties, one of which is the Koebe Quarter Theorem. It says that if  $f$  is conformal on  $\mathbb{D}$  with  $f(0) = 0$ , then

$$f(\mathbb{D}) \supseteq D\left(0, \frac{|f'(0)|}{4}\right).$$

i.e, the image of any conformal mapping with  $f(0) = 0$  always contains the disk of radius  $\frac{|f'(0)|}{4}$ . In my talk I will introduce a certain class of conformal mappings, give some useful results about them, and build up to a proof of the Koebe Quarter Theorem.