



*Institute of Mathematical Research  
Department of Mathematics*

## GEOMETRY SEMINAR

# Parabolic-like mappings

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### Abstract

A polynomial-like mapping is a proper holomorphic map  $f: U' \rightarrow U$ , where  $U', U \approx D$ , and  $U' \subset\subset U$ . This definition captures the behaviour of a polynomial in a neighbourhood of its filled Julia set. A polynomial-like map of degree  $d$  is determined up to holomorphic conjugacy by its internal and external classes, that is, the (conjugacy classes of) the restrictions to the filled Julia set and its complement. In particular the external class is a degree  $d$  real-analytic orientation preserving and strictly expanding self-covering of the unit circle: the expansivity of such a circle map implies that all the periodic points are repelling, and in particular not parabolic.

We extended the polynomial-like theory to a class of parabolic mappings which we called parabolic-like mappings. A parabolic-like mapping is thus similar to a polynomial-like mapping, but with a parabolic external class; that is to say, the external map has a parabolic fixed point, whence the domain is not contained in the codomain.

In this talk we give a sketch of the proof of the Straightening Theorem, which states that every parabolic-like mapping of degree 2 is hybrid equivalent to a member of the family of quadratic rational maps of the form  $P_A(z) = z + 1/z + A$ ,  $A \in \mathbb{C}$ . Then we will consider families of parabolic-like mappings, state the main result in this setting and give an application.

Date: June 21, 2013 (Friday)

Time: 2:30 – 3:30pm

Place: Room 210, Run Run Shaw Bldg., HKU

*All are welcome*