

CONVERGENCE PROPERTIES OF THE THURSTON ALGORITHM FOR QUADRATIC MATINGS

WOLF JUNG

Mating is an operation due to Douady and Hubbard, which combines the dynamics of two complex quadratic polynomials. It gives a rational map, whose Julia set is obtained by gluing together the polynomial Julia sets. The standard construction uses the Thurston pullback map in Teichmüller space, which has an attracting fixed point in good cases. The algorithm was implemented by Buff and Cheritat to obtain movies of slow mating. When postcritical points of the two polynomials need to be identified during mating, the algorithm is known to diverge in Teichmüller space, but it is shown to converge in a generalized sense. In the talk, basic definitions of mating and (augmented) Teichmüller space will be reviewed and illustrated with a few examples. The idea of the convergence proof is explained, which is using Thurston obstructions as a tool to control the position of postcritical points. Time permitting, the convergence of equipotential gluing is discussed as well, which is an alternative definition of mating based on a holomorphic motion of polynomial Julia sets.