Parabolic Fatou components with holes

Josias Reppekus

*Università di Roma “Tor Vergata”*

reppekus@mat.uniroma2.it

Many examples of invariant non-recurrent Fatou components of automorphisms $F$ of $\mathbb{C}^2$ arise from local projections to one variable in which the dynamics are approximately parabolic. After constructing a local basin $B$, a critical step is to show that the associated completely invariant global basin $\Omega$ of all orbits ending up in $B$ is not just a proper subset of a Fatou component.

I will present two types of examples in which the initial projection is non-linear and the resulting Fatou component $\Omega$ is biholomorphic to $\mathbb{C} \times \mathbb{C}^*$, i.e. “has a hole”. The constructions are based on the dynamics near a fixed point $p$ on the boundary of $U$ such that the eigenvalues of $F$ at $p$ are complex conjugate irrational rotations. For the first type, all orbits in $\Omega$ converge to $p$, whereas for the second type the orbits in $\Omega$ converge precisely to the points of an entire curve minus $p$. 