

Geometric proof of λ -lemma (based on a paper by E. Bedford and T. Firsova)

If $f : \Delta \times A \rightarrow \hat{C}$ is a holomorphic motion for some set $A \subset \hat{C}$, then it is extendable to a holomorphic motion of the whole \hat{C} . The result was first reduced to a discrete λ -lemma with A being discrete. Then this is further reduced to a filling theorem for a family of graphical tori. The filling theorem deals with a foliations of graphical tori (family of smooth perturbations of a circle fibered over another circle) by boundaries of horizontal like holomorphic disks.

Finally a sketch of the filling theorem was presented. The proof proceeds through a continuity method, where the openness follows from the implicit function theorem, whereas closedness argument hinges on geometric properties of (totally real) graphical tori.