

Regluing and topological models for quadratic rational functions

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We consider rational functions of one complex variable as topological dynamical systems on the sphere. These maps can be given by explicit formulas. However, explicit algebraic descriptions do not provide a good understanding of topological dynamics. Thus one needs descriptions, which we call *topological models*, that would be explicit in a different sense, i.e. from the viewpoint of topological dynamics.

Topological models for polynomials with locally connected Julia sets can be described in terms of *Thurston's laminations* in the disk. There are several remarkable constructions that build topological models for rational functions out of topological models for polynomials, for example, *matings* and *captures*.

We discuss another surgery tool called *regluing* [1]. It can be used to build new topological models for rational functions out of the already known topological models. E.g. captures can be understood as regluings. Moreover, regluing produces many matings out of every capture. In this way, we can prove that the boundaries of many hyperbolic components in parameter slices of degree two rational functions consist of matings [2].

References

- [1] V. Timorin, "Topological regluing of rational functions", *Inventiones Math.*, **179** (2009), Issue 3, 461–506

- [2] I. Mashanova, V. Timorin, "Captures, matings and regluings", to appear in the special issue of the Annales de Toulouse following the International Conference on Polynomial Matings.