

1038-37-255

James W. Cannon* (cannon@math.byu.edu), BYU Math Dept – 279 TMCB, Provo, UT 84602, and **William J. Floyd** and **Walter R. Parry**. *From Starburst to Barycenter: the combinatorial structure of two rational maps.*

We describe two postcritically finite rational maps, entitled respectively Starburst and Barycenter. They differ only by multiplication by a root of unity. Starburst has the entire 2-sphere as its Julia set. Barycenter has a Sierpinski curve as its Julia set. Each is modelled by a simple subdivision rule on a model 2-sphere. The subdivision rules capture the combinatorics of the actions on the respective Julia sets. The infinitely iterated actions differ combinatorially only by a cellular upper-semicontinuous decomposition of the 2-sphere. The action of Starburst collapses cellularly to the action of Barycenter, yet, analytically in the process, a dense set of points in Starburst explodes to create the disk complements of the Sierpinski Julia set of Barycenter. The starburst subdivision rule is finite under infinite iteration at each vertex (that is, it is a finite subdivision rule) while, in Barycenter, edges multiply exponentially at each vertex.

These examples are one of a family of similar examples. The examples suggest other ways of grouping rational maps – and, potentially, grouping subdivision rules from rational maps with those from cocompact or finite volume hyperbolic groups. (Received February 11, 2008)