

Abstract

In his celebrated work, Shishikura proved the existence of quadratic polynomials with Julia sets of Hausdorff dimension 2, and showed that the boundary of the Mandelbrot set also has Hausdorff dimension 2. His argument relies on a Key Lemma established via parabolic renormalization. In this paper, we develop a semi-local version of that Key Lemma. This allows us to compute the Hausdorff dimension of the boundaries of attracting basins and hyperbolic components. As an application, we confirm a conjecture of Milnor on dimensions in the polynomial setting.