Zeros of the Derivatives of Faber Polynomials Associated with a Universal Covering Map

For a compact set $E \subset \mathbb{C}$ containing more than two points, we study asymptotic behavior of normalized zero counting measures $\{\mu_k\}_0^\infty$ for the derivatives of Faber polynomials associated with E. For example if E has empty interior, we prove that $\{\mu_k\}_0^\infty$ converges in the weak-star topology to a measure whose support is the boundary of $g(D)$, where $g : \{|z| > 1\} \cup \{\infty\} \to \overline{\mathbb{C}} \backslash E$ is a universal covering map such that $g(\infty) = \infty$ and D is the Dirichlet domain (associated with g) with center at ∞.

Our results are counterparts of those of Kuijlaars and Saff (1995) on zeros of Faber polynomials.