O. El-Fallah, K. Kellay and T. Ransford, **Cyclicity in the Dirichlet space**, *Ark. Mat.*, 44 (2006), 61–86.

Abstract

Let $\mathcal{D}$ be the Dirichlet space, namely the space of holomorphic functions on the unit disk whose derivative is square-integrable. We give a new sufficient condition, not far from the known necessary condition, for a function $f \in \mathcal{D}$ to be *cyclic*, i.e. for $\{pf : p \text{ a polynomial}\}$ to be dense in $\mathcal{D}$.

The proof is based on the notion of Bergman–Smirnov exceptional set introduced by Hedenmalm and Shields. Our methods yield the first known examples of such sets that are uncountable. One of the principal ingredients of the proof is a new converse to the strong-type inequality for capacity.