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*Approximation via Toeplitz operators*

In several Banach spaces of analytic functions on the open unit disc  $\mathbb{D}$ , analytic polynomials are dense. The standard technique is to approximate a function  $f$  by its dilations  $f_r$ . The latter is a function which is defined on a disc larger than the open unit disc and thus one expects a better behavior by  $f_r$  on  $\mathbb{D}$ . Therefore, we "expect" to be able to approximate  $f_r$  by polynomials on  $\mathbb{D}$  and, if  $r$  is close enough to one, these polynomials should also be close enough to  $f$ . This general approach works in many function spaces, e.g., Hardy , Bergman and Dirichlet spaces. However, this method dramatically fails in de Branges-Rovnyak spaces  $\mathcal{H}(b)$ . But, at the same time, polynomials are still dense in these spaces. The first proof of this fact was non-constructive. Using Toeplitz operators, we provide a new constructive proof.

This is a joint work with O. El-Fallah, E. Fricain, K. Kellay, and T. Ransford.