

O. El-Fallah and T. J. Ransford, **Extremal growth of powers of operators satisfying resolvent conditions of Kreiss–Ritt type**, *J. Funct. Anal.*, 196 (2002), 135–154.

Abstract

Let E be a compact subset of the unit circle. We determine the extremal rate of growth of $(\|T^n\|)_{n \geq 1}$ for Banach-space operators T satisfying the resolvent condition

$$\|(T - \lambda I)^{-1}\| \leq \frac{\text{const.}}{\text{dist}(\lambda, E)} \quad (|\lambda| > 1).$$

This includes as extreme cases the Kreiss condition $E = \mathbf{T}$ and the Ritt condition $E = \{1\}$. For intermediate sets E , the cardinality, the measure and the Hausdorff dimension of E all play a rôle in determining the growth of $\|T^n\|$.

As a by-product, we also obtain lower bounds for the Taylor coefficients of functions f holomorphic on the unit disk and satisfying

$$|f(z)| \geq \frac{1}{\text{dist}(z, E)} \quad (|z| < 1).$$