

P. Vitse, **Functional calculus estimates under Kreiss type conditions**, *Math. Nachrichten*, 278 (2005), 1811-1822.

Abstract

It is shown that for an algebraic Banach space operator T , the Kreiss condition, $\|(zI - T)^{-1}\| \leq \frac{C}{|z|-1}$, $|z| > 1$, implies the following functional calculus estimate:

$$\|f(T)\| \leq \frac{16}{\pi} C \cdot \deg(T) \|f\|_{\infty},$$

where $\deg(T)$ is the degree of the minimal polynomial annihilating T . This result extends the known estimates of the powers of T for Kreiss operators on finite dimensional spaces. In the case of a general Kreiss operator, an estimate of the rational calculus is proved:

$$\|r(T)\| \leq \frac{16}{\pi} C (\deg(r) + 1) \|r\|_{\infty}.$$

Similar estimates hold for the polynomial calculus under generalized Kreiss conditions. A link is also established between the sharp constant in the first estimate and the norm of the best solution for a Nevanlinna-Pick type interpolation problem in analytic Besov classes.