

M. C. White and T. J. Ransford, **Spectral characterization of algebraic elements**,
Bull. London Math. Soc., 33 (2001), 77–82.

Abstract

It is known that, if a is an algebraic element of a Banach algebra A , then its spectrum $\sigma(a)$ is finite and there exists $\gamma > 0$ such that the Hausdorff distance to spectra of nearby elements satisfies

$$\Delta(\sigma(a+x), \sigma(a)) = O(\|x\|^\gamma) \quad \text{as } x \rightarrow 0.$$

We prove that the converse is also true, provided that A is semisimple.