THE SPECTRUM OF THE RESTRICTION TO AN INVARIANT SUBSPACE

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Let X be a Banach space, $A \in B(X)$ and M be an invariant subspace of A. If Δ is a hole of the spectrum $\sigma(A)$ of A, then either

$$\sigma\left(A|_M\right) \cap \Delta = \emptyset$$

or

$$\sigma\left(A|_M\right) \cap \Delta = \Delta \,.$$

I will present different proofs of that result given by J. Bram in 1955, by J. Scroggs in 1957, by T. Ito in 1958, by S. Parrott sometime during the 1960's, and by N. Yannakakis and myself in 2020. I will also discuss what happens when A is unbounded and when instead of the spectrum $\sigma\left(A|_M\right)$ of the restriction of A on M we take the spectrum $\sigma\left(A_M\right)$ of the operator $A_M : X/M \to X/M$.

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