

Spectra of multiplication operators on Banach algebras

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Let A be a Banach algebra and E - the algebra of all multiplication operators (elementary operators) on A . We look for the conditions under which the inclusions $\sigma(T + S) \subset \sigma(T) + \sigma(S)$ for all $T, S \in E$. The results we obtain have applications to the problem of the existence and "elementwise" characterization of the maximal Engel ideal and maximal E -solvable ideal in a Lie algebra of compact operators (the natural analogues of the nil-radical and radical of a finite-dimensional Lie algebra).