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Pseudospectra of special operators and Pseudospectrum preservers

Denote by $\mathcal{B}(H)$ the Banach algebra of all bounded linear operators on a complex Hilbert space H . Let $A \in \mathcal{B}(H)$, and denote by $\sigma(A)$ the spectrum of A . For $\varepsilon > 0$, define the ε -pseudospectrum $\sigma_\varepsilon(A)$ of A as

$$\sigma_\varepsilon(A) = \{z \in \sigma(A + E) : E \in \mathcal{B}(H), \|E\| < \varepsilon\}.$$

In this talk, the pseudospectra of several special classes of operators are characterized. As an application, complete descriptions are given of the maps of $\mathcal{B}(H)$ leaving invariant the pseudospectra of $A \bullet B$ for different kind of binary operations \bullet on operators such as the difference $A - B$, the operator product AB , and the Jordan product $AB + BA$.