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A characterization of certain essentially spectrally bounded operators. (Chinese. English summary) Zbl 1223.47037

Summary: Let $\mathcal{H}$ be an infinite-dimensional complex Hilbert space, $\mathcal{B}(\mathcal{H})$ be the algebra of all bounded linear operators on $\mathcal{H}$, and $\Phi$ be a linear mapping from $\mathcal{B}(\mathcal{H})$ onto itself. We show that $\Phi$ is essentially spectrally bounded and surjective up to compact operators if and only if $\Phi(\mathcal{K}(\mathcal{H})) \subseteq \mathcal{K}(\mathcal{H})$ and the induced mapping $\Psi$ is a continuous homomorphism or a continuous anti-homomorphism.

MSC:
47B49 Transformers, preservers (linear operators on spaces of linear operators)
47B40 Spectral operators, decomposable operators, well-bounded operators, etc.
46L10 General theory of von Neumann algebras

Keywords:
spectrally bounded; Calkin algebra; Jordan homomorphism