

2-29-2016

Review: On rank one perturbations of complex symmetric operators

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Recommended Citation

MR3403897 Ko, E., Lee, J.E., On rank one perturbations of complex symmetric operators, *Filomat* 29 (2015), no. 8, 1795-1809.
(Reviewer: Stephan R. Garcia)

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MR3403897 (Review) [47B38](#) [47A11](#) [47A53](#) [47B35](#)**Ko, Eungil** (KR-EWHA); **Lee, Ji Eun** (KR-EWHA-IM)**On rank one perturbations of complex symmetric operators. (English summary)***Filomat* **29** (2015), *no. 8*, 1795–1809.

Let \mathcal{H} denote a separable, complex Hilbert space. A bounded linear operator $T: \mathcal{H} \rightarrow \mathcal{H}$ is a *complex symmetric operator* (CSO) if there is a conjugation $C: \mathcal{H} \rightarrow \mathcal{H}$ so that $T = CT^*C$ (a *conjugation* is a conjugate-linear, isometric involution). One says that T is *decomposable* if for every open cover $\{U, V\}$ of \mathbb{C} , there are T -invariant subspaces \mathcal{X} and \mathcal{Y} so that $\mathcal{H} = \mathcal{X} + \mathcal{Y}$, $\sigma(T|_{\mathcal{X}}) \subseteq \overline{U}$, and $\sigma(T|_{\mathcal{Y}}) \subseteq \overline{V}$. The authors study the decomposability of rank-one perturbations of CSOs. They also investigate conditions under which such a perturbation is hyponormal or satisfies the a -Weyl theorem. They study several instructive examples based on shift operators and truncated Toeplitz operators.

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