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Review: On pairs of generalized and hypergeneralized projections in a Hilbert space

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Radosavljević, Sonja (SE-NISSM); Djordjević, Dragan S. (SE-NISSM)
On pairs of generalized and hypergeneralized projections in a Hilbert space.
(English summary)

Let $\mathcal{H}$ be a Hilbert space and $\mathcal{L}(\mathcal{H})$ denote the set of bounded linear operators on $\mathcal{H}$. One says that $A \in \mathcal{L}(\mathcal{H})$ is a \textit{generalized projection} if $A^2 = A^*$ and a \textit{hypergeneralized projection} if $A^2 = A^\dagger$. Here $A^\dagger$ denotes the Moore-Penrose generalized inverse of $A$. The authors provide a number of characterizations of generalized and hypergeneralized projections. They also provide block-matrix representations for these operators, and they examine conditions which imply that the product, difference, or sum of such operators belongs to the same class.

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