Scope

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These Matlab routines are intended to optimize the eigenvalues and singular values of matrix-valued functions of the form

$$A(\omega) = f_1(\omega)A_1 + f_2(\omega)A_2 + \cdots + f_\kappa(\omega)A_\kappa$$

for given matrices $A_1, \ldots, A_\kappa$ and functions $f_1, \ldots, f_\kappa : \mathbb{R} \to \mathbb{R}$. For eigenvalue problems $A_1, \ldots, A_\kappa, A(\omega)$ must be square and Hermitian. For singular value problems they do not have to be Hermitian and they can be rectangular.

The routines are provided for the following problems.
(1) Maximize the Jth largest eigenvalue of $A(\omega)$ over ω (`leigopt_max`)
(2) Minimize the Jth largest eigenvalue of $A(\omega)$ over ω (`leigopt_min`)
(3) Minimize the Jth smallest singular value of $A(\omega)$ over ω (`lsvdminopt_min_general`)