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Computing the most stable switching laws of a linear system.

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When considering the stability under arbitrary switching of a discrete-time linear switched system $x(n+1) = A_{\sigma(n)}x(n), \qquad \sigma : \mathbb{N} \to \{1, ..., m\}$,where\x(0) \in \mathbb{R}^d, thematrixA_{\sigma(n)} \in \mathbb{R}^{d \times d}belongstoafinitefamilyF = \\{ A_i \\}\{1 \leq i \leq m}and\sigmadenotestheswitchinglaw, itisknownthatthen calledspectrum−minimizingproductsofthefamilyF.Theminimalrateofgrowthofitstrajectoriesiscalledlowerspectralradiu \rho(F).Foranormalizedfamily Fofmatrices(i.e., withlowerspectralradius \hat \rho(F) = 1)thatshareaninvariantcone K(themos [1, 2] and show how to generalize some of the known results to this more general setting (Guglielmi & Zennaro, in progress [5]). These generalizations are of interest because common invariant multicones may well exist when common invariant cones do not.

References

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