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# Input redundancy of switched linear systems via polynomial parameter-dependent systems

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## Résumé

The output of a system may not always be uniquely determined by a single input function, this phenomenon is known as input redundancy. Leveraging input redundancy enables us to meet requirements beyond the primary control task, as in the control allocation problems. Understanding and exploiting this redundancy is crucial to developing effective control allocation strategies. Although input redundancy has been explored for some classes of systems, its implications in switched linear systems remain an open problem. In this talk, we present a criterion for determining whether a switched linear system exhibits input redundancy concerning the continuous input. Our approach initially involves transforming the switched linear system into a parameter-dependent linear system, where the dependence is polynomial in a univariate parameter, using Lagrange polynomial interpolation. This allows us to leverage recent results in geometric control theory and input redundancy for parameter-dependent systems and adapt them to the context of switched systems to obtain the desired conditions.

**Mots-Clés:** Input redundancy, Switched systems, Geometric control theory

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