Time-Optimal Control for Linear Time-Invariant Systems

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Abstract

In the context of a Bolza minimization problem, the classical Pontryagin Maximum Principle provides a necessary condition for a controlled trajectory to be optimal. When the dynamics of the controlled system is both linear in the state and in the control, a simple algebraic criterion can be used to determine whether it is also a sufficient condition. In this seminar, we combine the Pontryagin Maximum Principle and the algebraic criterion in order to explicitly solve two minimal-time linear problems.

References

[1] H. Schttler, U. Ledzewicz, *Geometric Optimal Control*, Springer, 2012

[2] A. Bressan, B. Piccoli, *Introduction to the Mathematical Theory of Control*, American Institute of Mathematical Sciences, 2007

[3] E.B. Lee, L.Markus, *Foundations of Optimal Control Theory*, Wiley & Sons, 1967