Mathematics > Optimization and Control

Coordinate-invariant incremental Lyapunov functions

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The notion of incremental stability was proposed by several researchers as a strong property of dynamical and control systems. In this type of stability, trajectories converge to each other, rather than to an equilibrium point or a particular trajectory. Similarly to stability, Lyapunov functions play an important role in the study of incremental stability. In this paper, we propose coordinate-invariant notions of incremental Lyapunov function and provide characterizations of incremental stability in terms of existence of the proposed Lyapunov functions.

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