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Title:

On notions of input-to-output stability for systems with time-delays

Abstract:

We will discuss a notion of input-to-output stability (IOS), the output-Lagrange IOS property, and its Lyapunov characterizations for systems with time-delays. The output-Lagrange IOS property for delay-free systems (those that are not affected by time delays) has played critical roles in the Lyapunov theory for a variety of output stability properties. It is expected that the output-Lagrange IOS property will again play the same roles for delay systems. Furthermore, some new features arise in the decay estimations of the Lyapunov-Krasovskii functionals, an analogy of Lyapunov functions for delay-free systems. We will also provide some comparisons among the various notions on output stability for delay systems.