

1016-90-91

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Analysis and control issues of complementarity systems.

This talk is concerned about analysis and control of complementarity systems arising from engineering and constrained dynamic optimization problems. The first issue is solution existence and uniqueness of complementarity systems. We will talk about our recent progress on this problem for complementarity systems with a lower index. The second issue is the non-Zeno behavior of complementarity systems which has many interesting consequences for numerical and system/control analysis of complementarity systems. We will introduce several non-Zeno concepts and show the non-Zenoness in strong or weak sense for strongly regular differential variational inequalities and a class of linear cone complementarity systems respectively. Lastly we discuss the observability issue and show the local observability conditions derived based upon the non-Zeno results. If time permits, we will also briefly talk about our recent work on Lyapunov stability of complementarity systems with C^1 state trajectories. (Received February 04, 2006)