

Title: Stability of Switched Systems

Abstract: A continuous-time switched system is a piecewise continuous dynamical system with finitely many subsystems, and a piecewise constant function, known as the switching signal, which determines the switching of the system between subsystems. A signal is represented by the admissible switching from one subsystem to another, and the times at which these switchings take place. In this talk, the switching between subsystems will be governed by an underlying digraph. That is, the system can switch from a subsystem to another if there is a directed edge between the corresponding vertices on the underlying graph. Even when all the subsystems are stable, the switched system may be unstable for some switching signals. Moreover, one can construct a signal which can stabilize a switched system with all unstable subsystems. Thus, it is evident that the stability of a switched system not only depends on the properties of subsystems, but also on the switching signal. In this talk, we will present a survey on some sufficient conditions on the switching signal which guarantee stability of a switched system.