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Title: Converse Lyapunov Theorem for Hyperbolic Partial Differential Equations of Conservation Law and Linear Integral Difference Equations.

Abstract: In this talk, we will focus on a specific type of time-delay systems, namely, linear integral difference equations, which are seldom studied in the literature. We will review their strong connection with systems of Linear Hyperbolic Partial Differential Equations and the corresponding control challenges. We will present some contexts of hyperbolic PDEs in which stabilizing control laws could be designed via the reformulation of the dynamics by means of a difference equation. We will also present how this reformulation could be used to express a converse Input-to-State Stability Lyapunov theorem for systems of hyperbolic PDEs of conservation laws. This talk is inspired from recent works with Jean Auriol (CNRS, L2S).