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Title:

Using saturated controls for the control of PDEs

Abstract:

The general problem under consideration in this talk will be the use of saturated controller for PDEs. Two kinds of equations will be considered in this talk: the linear wave equation (with either boundary controller or in-domain control), and the nonlinear Korteweg-de Vries equation (with internal control). For both equations, saturating control laws will be designed. By taking into consideration the presence of amplitude-limited controls, we will apply nonlinear semigroup theory and Lyapunov techniques, among other methods. It will allow us to derive well-posedness results and asymptotic stability properties of the closed-loop systems. Some numerical simulations illustrate the convergence property of the solutions to the closed-loop nonlinear partial differential equations.