

Control and Regulation of a Fluid Flow System Described by Hyperbolic PDE

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Abstract

We shall talk about the proportional and integral control of a fluid flow system. The system is described by nonlinear hyperbolic partial differential equations with multi-inputs and multi-outputs. We study first equilibrium states and their local stability for the open-loop system. Then we linearize the nonlinear system around an equilibrium state and design proportional and integral stabilizing controllers for the closed-loop system. Numerical simulations and analysis of asymptotic behaviors are carried out to show performances of the designed controllers.

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