

Stabilization of some reaction-diffusion systems with state constraints

Sebastian Anița

We investigate the zero-stabilization of one of the components of the non-negative solutions to some reaction-diffusion systems. We provide necessary conditions and sufficient conditions for nonnegative stabilizability in terms of the magnitude of the principal eigenvalue of a related elliptic operator. In case of nonnegative stabilizability a simple feedback stabilizing control is provided. The relationship between the stabilization rate and the geometry of the support of the control is also discussed. The optimal position of the support of the control is investigated by different techniques. Extensions to systems with nonlocal terms are also possible.