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## A decomposed approach for exponential stabilization of a class of distributed delay systems

### Communication Info

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- (1) Decomposition method
- (2) Distributed delay
- (3) Feedback control
- (4) Exponential stabilization

### Abstract

The modelling of complex systems in a wide range of fields including physics, biology, ... often requires the use of functional differential equations with time delays (1). Their presence often introduces instability into the system dynamics (2,3), which makes the design of suitable feedback controls essential.

This work discusses the exponential stabilization for a class of distributed delay systems in Hilbert space via an approach based on a decomposition of the state space that utilizes the system's spectral properties.

Sufficient conditions are established. Furthermore, an explicit optimal decay rate estimate is obtained.

Finally, some numerical examples and simulations of the theoretical results are presented.

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