

# Generalized approximate boundary synchronization for a coupled system of wave equations

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## Abstract

In this paper, we consider the generalized approximate boundary synchronization for a coupled system of wave equations with Dirichlet boundary controls. We analyse the relationship between the generalized approximate boundary synchronization and the generalized exact boundary synchronization, give a sufficient condition to realize the generalized approximate boundary synchronization and a necessary condition in terms of Kalman's matrix, and show the meaning of the number of total controls. Besides, by the generalized synchronization decomposition, we define the generalized approximately synchronizable state, and obtain its properties and a sufficient condition for it to be independent of applied boundary controls.

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