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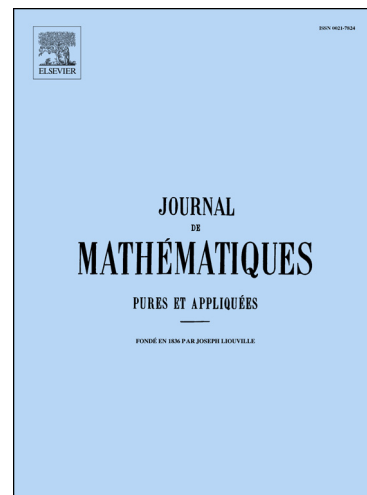
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One-sided exact boundary null controllability of entropy solutions to a class of hyperbolic systems of conservation laws [☆]

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Abstract

In this paper, the one-sided exact boundary null controllability of entropy solutions is studied for a class of general strictly hyperbolic systems of conservation laws, whose negative (or positive) characteristic families are all linearly degenerate. The authors first prove the well-posedness of semi-global solutions constructed as the limit of ε -approximate front tracking solutions to the mixed initial-boundary value problem with general nonlinear boundary conditions and they establish various properties of both the ε -approximate front tracking solutions and such solutions. By means of essential modifications of the strategy suggested by the first author in [17] originally for the local exact boundary controllability in the framework of classical solutions, the one-sided local exact boundary null controllability of entropy solutions can then be realized via boundary controls acting on one side of the boundary, where the incoming characteristics are all linearly degenerate.

Résumé

Dans cet article, la contrôlabilité nulle exacte unilatérale de solutions entropiques est étudiée pour une classe de systèmes strictement hyperboliques généraux de lois de conservations, dont toutes les familles caractéristiques négatives (resp. positives) sont linéairement dégénérées. D'abord, on démontre que les solutions semi-globales du problème mixte avec des conditions aux limites non linéaires générales, construites par la limite de solutions ε -approchées obtenues par le schéma de suivi de fronts, sont bien-posées, et on donne des propriétés de solutions ε -approchées et de ces solutions semi-globales,

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