

Robust Model Reduction by L_1 Minimization: Application for Linear and Non Linear Hyperbolic Problems

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Abstract

We propose a method for the approximation of non linear hyperbolic equations in the scalar and the system case. It uses L^1 minimisation and show why this is a natural framework for hyperbolic problems. It is tested on nonlinear problems such as the Burger equation and the (1D) Euler equations, and the results indicates that the method is accurate with very few modes, and generate physicaly acceptable solutions, that are moreover oscillation free. The issue of the computational cost is also adressed. By the time of the conference, we hope to be able to show multidimensional problems.