

STABILITY RESULTS FOR BRESSE SYSTEMS WITH THERMOELASTIC COUPLING ON THE SHEAR FORCE AND THE BENDING MOMENT

ABSTRACT. In this work our main goal is to twofold. First, based on the constitutive thermal laws provided by (2), we propose a new thermoelastic Bresse system with temperature deviations on the shear force and the bending moment. Thus, the main result is concerned with the exponential stability in the case of equal wave speeds and optimal polynomial stability for regular initial data in the case of different wave speeds, where we have used the abstract results due to Prüss (3) and Borichev-Tomilov (1), respectively. Next, our second main aim is to improve the polynomial decay rate $t^{-1/4}$ provided by (4) in the case of full Dirichlet boundary condition, see Theorem 5.2 therein. To do so, we use a new observability result for Bresse systems along with local resolvent estimates. Therefore, we are able to prove the same polynomial decay rate $t^{-1/2}$ for regular initial data and any boundary condition under consideration, including the Dirichlet one.

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