

Stability Properties of the Composite Structure-Fluid Interaction PDE Systems

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We consider the dynamics of a multilayered structure-fluid interaction (FSI) PDE system for which the coupling of 3D Stokes and 3D elastic dynamics is realized via an additional 2D elastic equation on the boundary interface. We analyze the long time behavior of solutions to such FSI coupled system in the sense of strong stability. Our proof is based on an analysis of the spectrum of the associated semigroup generator A which in particular entails the elimination of all three parts of the spectrum of A from the imaginary axis.

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