On the Exponential Stability of A Compressible FSI PDE System

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We consider a linearized compressible flow structure interaction (FSI) PDE model with a view of analyzing the stability properties of both the compressible flow and plate solution components. We operate in the time domain by way of obtaining the necessary energy estimates which culminate in an alternative proof for the uniform stability of finite energy compressible flow-structure solutions. Unlike the frequency domain approach followed in the earlier papers, we give the proof of our stability result in time domain via an approach which involves a gradient type multiplier to obtain the necessary energy estimates.