In the scope of this contribution a model for the Fluid Structure Interaction (FSI) is presented, where absorptive structures can be considered. A special focus is layed on the interface coupling modes between absorber and fluid. For the simulation of the spatial resolution of the sound field within acoustic cavities techniques based on Finite Element formulations are used. To reduce the number of degrees of freedom a model reduction method, based on a Component Mode Synthesis (CMS), is applied. The cavity boundary conditions, e.g. compound absorbers made of homogenous plates and porous foams, are modeled using Integral Transform Methods (ITM) and appropriate material formulations. Wavenumber dependent impedances are computed for the absorptive structure and used for the coupling with the acoustic cavity adding interface coupling modes for the fluid and applying Hamilton's principle.

Stichworte: Room Acoustics, Fluid Structure Interaction, Component Mode Synthesis, Integral Transform Methods

Herausgeber: