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There are examples of flexible structures such as suspension bridges, overhead transmission lines, and dynamically loaded helical springs that are subjected to oscillations due to different causes, such as windflows or earthquakes. In some cases, the so-resulted oscillations may cause undesirable behaviour. In some flexible structures (such as an overhead transmission line or a cable of a suspension bridge) various types of wind-induced mechanical vibrations can occur. Vortex shedding for instance causes usually high frequency oscillations with small amplitudes, whereas low frequency vibrations with large amplitudes can be caused by flow-induced oscillations (galloping) of cables on which ice or snow has accreted. These vibrations can give rise to material fatigue. To suppress these oscillations various types of dampers have been applied in practice. Simple models which describe these oscillations can be expressed in initial-boundary value problems for wave equations or for beam equations. The operator and boundary conditions describing these problems are usually of a non-selfadjoint nature.

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