

Qualitative properties of localized dissipative systems



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The elimination of noise and vibration effects in elastic structures is an important topic in materials science. The way these structures are built has a direct impact on minimizing the vibration effects. Then, it is important to study structures with more than one type of material, i.e., models in which the dissipative mechanism differs or acts only on a part of the material. Models describing dissipative systems acting on the whole domain are well-studied and their qualitative properties (asymptotic behavior) are well-known. On the other hand, models that exhibit localized dissipative mechanisms demand further studies. Regarding differentiability and analyticity properties, we have not found works that have heterogeneous domains. For this reason, we focus on working with models that have heterogeneous domains and investigate qualitative properties of the model solution. To investigate the properties, we use semigroup theory and some functional analysis tools.

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