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Stability Properties for Some Non-autonomous Dissipative Phenomena Proved by Families of Liapunov Functionals

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Abstract: We prove some new results regarding the boundedness, stability and attractivity of the solutions of a class of initial-boundary-value problems characterized by a quasi-linear third order equation which may contain time-dependent coefficients. The class includes equations arising in superconductor theory, and in the theory of viscoelastic materials. In the proof we use a family of Liapunov functionals W depending on two parameters, which we adapt to the 'error', i.e. to the size σ of the chosen neighbourhood of the null solution.

Keywords: nonlinear higher order PDE-stability, boundedness-boundary value problems.

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