

STABILITY ANALYSIS FOR NON-AUTONOMOUS SEMILINEAR EVOLUTION EQUATIONS IN HILBERT SPACES: A PRACTICAL APPROACH

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Abstract. The Luenberger observer design problem for non-autonomous semilinear evolution equations has been the subject of several studies. However, much less interest has been given to the more general infinite-dimensional systems. In this paper, we investigate the global practical uniform stability analysis problem for a certain class of non-autonomous semilinear evolution equations with the associated nominal system is linear and the perturbation term satisfies some conditions. Moreover, we study the compensator design in the practical sense for two classes of non-autonomous semilinear evolution equations having a nominal linear part. We propose some classes of memoryless state linear and nonlinear feedback controllers. We illustrate the theory with an example of a controlled perturbed heat equation.

Mathematics subject classification (2020): 35B35, 35B40, 35K58, 93C20, 93C25.

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