



A New Feedback Control for Exponential and Strong Stability of Semi-Linear Systems with General Decay Estimates

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Abstract: In this paper, to study the stabilization for the inhomogeneous nonlinear Schrödinger equation, we will explore the general form of semilinear control systems in Hilbert state space and apply the obtained results to the particular case of the nonlinear Schrödinger equation. We propose a new output feedback control approach that achieves strong and exponential stabilization if certain approximate observability assumptions are met. We demonstrate the existence and uniqueness of solutions and provide an estimate of convergence speed in the case of strong stabilization.

Keywords: *control systems; stabilization of systems by feedback; semilinear systems; exponential stability.*

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