Weakly Damped Nonlinear Schrödinger Equations with Dirichlet Control

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Abstract: In this talk, we present a recent result on the weakly damped focusing nonlinear Schrödinger equations on bounded domains at the natural H^1-energy level with Dirichlet control acting on a portion of the boundary. We introduce the dynamic extension method for homogenizing the inhomogeneous boundary input. Then, we construct approximate solutions using monotone operator theory. A hidden trace regularity is proved to control the norm of the solutions in a global sense, which allows the use of compactness techniques. Finally, using multiplier techniques, we show the exponential decay of solutions under the assumption that the boundary control also decays in a similar fashion.