

A numerical study of Parity-Time symmetric systems of two coupled nonlinear Schrödinger equations

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The study of coupled systems of nonlinear Schrödinger equations is fascinating because of the diversity of the applications that can be considered. These systems can describe phenomena in nonlinear optics, condensed matter physics and plasma physics. But exploring the existence, uniqueness and stability of solutions are also areas that contribute to our understanding of physical phenomena. In this presentation, we'll revisit the properties that a coupled system verifies, in particular the Parity-Time symmetry property, which is one of the concepts that have led to a plethora of developments for physicists. We'll see how the numerical study of this coupled system illustrates theoretical results and allows us to make further additions, particularly in the critical case.