

# Nonlocal feedback in nonlinear systems

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A shifted or misaligned feedback loop gives rise to a two-point nonlocality that is the spatial analog of a temporal delay. Important consequences of this nonlocal coupling have been found both in diffusive and in diffractive systems, and include convective instabilities, independent tuning of phase and group velocities, as well as amplification, chirping and even splitting of localized perturbations. Analytical predictions about these nonlocal systems as well as their spatio-temporal dynamics are discussed in one and two transverse dimensions and in presence of noise.

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