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**Multidimensional stimulated emission with a single phase-shaped pulse** ARKAPRABHA KONAR, RACHEL GLENN, VADIM. V. LOZOVY, MARCOS DANTUS, Michigan State University — Two-dimensional optical signals from a single-pulse excitation are experimentally and theoretically investigated as a function of a sharp spectral phase-step. The phase-step introduces asymmetric diagonal and off-diagonal features into the stimulated emission spectra that are sensitive to the single-photon transitions of IR-125. The sharp phase-step causes enhanced absorption of the high frequency components and a sharp narrow-band emission of low frequency. We calculate the frequency-dispersed nonlinear spectrum versus the phase step to fourth-order in the field. We show that the third-order polarization of the sample is sensitive to phase changes in the excitation spectrum and it is responsible for the observed narrowband feature in the experiments.

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