Spatial Synchronization Between Optical Waveguides in Arrays of Kerr Fibres

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We study a new family of solutions of the discrete nonlinear Schroedinger equation (DNLSE), whose initial conditions are close to the resonances of a suitable area-preserving map. We show that some of these solutions are stable. |We study the DNLSE in the context of arrays consisting of a finite number of Kerr waveguides.
We demonstrate that the intensities of certain pairs of fibers display show complete or partial correlation as light propagates along the fibres. Moreover, the inhomogeneity of the waveguides induces large oscillations while preserving the synchronization mentioned above. Finally, we have generalized our findings to a model where the electric field polarizations are taken into account.

References:

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