Few-cycle spatiotemporal optical solitons in waveguide arrays

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Résumé en anglais	We consider the propagation of Gaussian spatiotemporal wave packets in arrays of parallel optical waveguides, assuming linear and nondispersive coupling between the adjacent guides. The numerical analysis is based on a discrete version of the modified Korteweg–de Vries equation that adequately describes the propagation of ultrashort (few-cycle) spatiotemporal solitons in waveguide arrays. Two kinds of such discrete-continuous localized wave forms, which are discrete solitons in the transverse direction, and few-cycle solitons in the longitudinal one, are put forward, namely breathing solitons and single-humped ones. The conditions of formation of these localized spatiotemporal structures, their time duration and spatial width, as well as their energies, are also investigated.
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[1] http://okina.univ-angers.fr/herve.leblond/publications
[2] http://okina.univ-angers.fr/dkremer/publications
[3] http://okina.univ-angers.fr/publications?f%5Bauthor%5D=8696
[4] http://okina.univ-angers.fr/publications/ua15886

[5] http://dx.doi.org/10.1103/PhysRevA.95.043839
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