



# Derivation of a coupled system of Korteweg-de Vries equations describing ultrashort soliton propagation in quadratic media by using a general Hamiltonian for multilevel atoms

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Auteur	Leblond, Hervé [1], Triki, Houria [2], Mihalache, Dumitru [3]
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Résumé en anglais	We consider the propagation of ultrashort solitons in noncentrosymmetric quadratically nonlinear optical media described by a general Hamiltonian of multilevel atoms. We use a long-wave approximation to derive a coupled system of Korteweg-de Vries equations describing ultrashort soliton evolution in such materials. This model was derived by using a rigorous application of the reductive perturbation formalism (multiscale analysis). The study of linear eigenpolarizations in the degenerate case and the corresponding formation of half-cycle solitons from few-cycle-pulse inputs are also presented.
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## Liens

- [1] <http://okina.univ-angers.fr/herve.leblond/publications>
- [2] [http://okina.univ-angers.fr/publications?f\[author\]=23980](http://okina.univ-angers.fr/publications?f[author]=23980)
- [3] [http://okina.univ-angers.fr/publications?f\[author\]=8696](http://okina.univ-angers.fr/publications?f[author]=8696)
- [4] <http://okina.univ-angers.fr/publications/ua5191>
- [5] <http://dx.doi.org/10.1103/PhysRevA.85.053826>

