A new criterion for the existence of KdV solitons in ferromagnets

Titre	A new criterion for the existence of KdV solitons in ferromagnets
Type de publication	Article de revue
Auteur	Leblond, Hervé [1]
Editeur	Institute of Physics
Type	Article scientifique dans une revue à comité de lecture
Année	2003
Date	Sep-02-2004
Numéro	7
Pagination	1855–1868
Volume	36
Titre de la revue	Journal of Physics A: Mathematical and General
ISSN	0305-4470
Résumé en anglais	The long-time evolution of the KdV-type solitons propagating in ferromagnetic materials is considered through a multi-time formalism, it is governed by all equations of the KdV hierarchy. The scaling coefficients of the higher order time variables are explicitly computed in terms of the physical parameters, showing that the KdV asymptotic is valid only when the angle between the propagation direction and the external magnetic field is large enough. The one-soliton solution of the KdV hierarchy is written down in terms of the physical parameters. A maximum value of the soliton parameter is determined, above which the perturbative approach is not valid. Below this value, the KdV soliton conserves its properties during an infinite propagation time.
URL de la notice	http://okina.univ-angers.fr/publications/ua12107 [2]
DOI	10.1088/0305-4470/36/7/305 [3]
Lien vers le document	http://iopscience.iop.org/0305-4470/36/7/305 [4]
Titre abrégé	J. Phys. A: Math. Gen.

Liens

[1] http://okina.univ-angers.fr/herve.leblond/publications
[2] http://okina.univ-angers.fr/publications/ua12107
[3] http://dx.doi.org/10.1088/0305-4470/36/7/305
[4] http://iopscience.iop.org/0305-4470/36/7/305