Mathematical Physics

A Simple Classification of Solitons

Yousef Yousefi, Khikmat Kh. Muminov

(Submitted on 6 Jun 2012 (v1), last revised 7 Jun 2012 (this version, v2))

In this report, fundamental educational concepts of linear and non-linear equations and solutions of nonlinear equations from the book High-Temperature Superconductivity: The Nonlinear Mechanism and Tunneling Measurements (Kluwer Academic Publishers, Dordrecht, 2002, pages 101-142) is given. There are a few ways to classify solitons. For example, there are topological and nontopological solitons. Independently of the topological nature of solitons, all solitons can be divided into two groups by taking into account their profiles: permanent and timedependent. For example, kink solitons have a permanent profile (in ideal systems), while all breathers have an internal dynamics, even, if they are static. So, their shape oscillates in time. The third way to classify the solitons is in accordance with nonlinear equations which describe their evolution. Here we discuss common properties of solitons on the basis of the four classification.

Comments:	18 pages, 11 figures. arXiv admin note: substantial text overlap with arXiv:cond-mat/0411452 and arXiv:cond-mat/0606187 by other authors
Subjects:	**Mathematical Physics (math-ph)**; Pattern Formation and Solitons (nlin.PS)
Cite as:	**arXiv:1206.1294 [math-ph]**
	(or **arXiv:1206.1294v2 [math-ph]** for this version)

Submission history

From: Yousef Yousefi Dr [view email]
[v1] Wed, 6 Jun 2012 18:34:25 GMT (107kb,D)
[v2] Thu, 7 Jun 2012 07:31:30 GMT (107kb,D)

Which authors of this paper are endorsers?