



## ON SOLITON INTERACTIONS FOR THE HIERARCHY OF A GENERALISED HEISENBERG FERROMAGNETIC MODEL ON $SU(3)/S(U(1) \times U(2))$ SYMMETRIC SPACE\*

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**Abstract.** We consider an integrable hierarchy of nonlinear evolution equations (NLEE) related to linear bundle Lax operator  $L$ . The Lax representation is  $\mathbb{Z}_2 \times \mathbb{Z}_2$  reduced and can be naturally associated with the symmetric space  $SU(3)/S(U(1) \times U(2))$ . The simplest nontrivial equation in the hierarchy is a generalization of Heisenberg ferromagnetic model. We construct the  $N$ -soliton solutions for an arbitrary member of the hierarchy by using the Zakharov-Shabat dressing method with an appropriately chosen dressing factor. Two types of soliton solutions: quadruplet and doublet solitons are found. The one-soliton solutions of NLEEs with even and odd dispersion laws have different properties. In particular, the one-soliton solutions for NLEEs with even dispersion laws are *not* traveling waves while their velocities and amplitudes are time dependent. Calculating the asymptotics of the  $N$ -soliton solutions for  $t \rightarrow \pm\infty$  we analyze the interactions of quadruplet solitons.

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\*Reprinted from *J. Geom. Symmetry Phys.* **25** (2012) 23–55.