

Pfaffian Solutions to Non-Commutative Integrable Systems

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Many integrable systems are known to have multisoliton solutions that can be written in the form of determinants. A few of these systems have non-commutative versions, one example is the non-commutative Kadomsev Petviashvili equation. The multi-soliton solutions to this equation can be written in terms of quasi-determinants (these are a non-commutative analogue of a determinant). A few integrable systems, such as the BKP equation and the Hirota and Ohta coupled soliton equations have pfaffian solutions. In this talk I will investigate a non-commutative version of a pfaffian and construct a non-commutative version of the Hirota and Ohta coupled soliton equations, satisfied by these non-commutative pfaffians.

Background:

Gilson and Nimmo, J.Phys A, 2007, Vol 40 (14) , pp.3839-3850

Hirota and Ohta, J. Phys. Soc. of Japan, 1991, Vol 60, No.3, pp.798-809