

# Matrix KdV and mKdV hierarchies: Noncommutative soliton solutions and explicit formulae

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## Abstract

The study here comprised represents a further development of the previous one, by the same authors [3]. Specifically, on application

space-techniques, at first, general solution formulae to construct solutions

of the scalar and matrix Korteweg-de Vries and modified Korteweg-de

Vries hierarchies are obtained. Then, in the cases where soliton solutions are concerned, the interest mainly focussed on solitons and breathers, their countable superpositions and multisolitons solutions admitted by the corresponding hierarchies. Here matrix solutions of the matrix Korteweg-de Vries hierarchy, which were first constructed by Goncharenko [10], are here obtained.