

Conditional Similarity Reductions of Jimbo-Miwa Equation via the Classical Lie Group Approach

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(Received: 2002-6-24; Revised:)

Abstract: Recently, the Clarkson and Kruskal direct method has been modified to find new similarity reductions (conditional similarity reductions) of nonlinear systems and the results obtained by the modified direct method cannot be obtained by the current classical and/or non-classical Lie group approach. In this paper, we show that the conditional similarity reductions of the Jimbo-Miwa equation can be reobtained by adding an additional constraint equation to the original model to form a conditional equation system first and then solving the model system by means of the classical Lie group approach.

PACS: 02.20.Sv, 02.30.Jr

Key words: direct method, Jimbo-Miwa equation, conditional similarity reduction, classical Lie group approach

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