Symmetry group and exact solutions for the 2+1 dimensional AKNS equation

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Abstract:

A (2+1) dimensional Ablowitz-Kaup-Newell-Segur (AKNS) system is obtained from the potential Boiti-Leon-Manna-Pempinelli equation by means of an asymptotically exact reduction method based on Fourier expansion and spatiotemporal rescaling. Furthermore, applying the modified direct method to the (2+1) dimensional AKNS system, we get its symmetry and the relationship between the new solution and the old one. Based on the relationship, a new solution can be obtained by using a given solution of the equation.