

A three-dimensional three-wave resonant interaction equation with self-consistent sources

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Abstract

In this paper, a three-dimensional three-wave resonant interaction equation with self-consistent sources (3D3WRI ESCS) are constructed via the source generation procedure. The corresponding Gram-type determinant solutions are then derived. As a simple case, the (1, 1, 1) lump solution is subsequently examined. A new feature of this 3D3WRI ESCS is that we allow $(a_1X_1 + a_2X_2 + a_3X_3)$ -dependence of the arbitrary constants in the determinant solution for the 3D3WRI equation while applying the source generation procedure. Finally, we show how this 3D3WRI ESCS is transformed into other cases of 3D3WRI ESCS.

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