Solitary Wave and Periodic Wave Solutions for the Relativistic Toda Lattices

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Abstract: In this work, an adaptation of the tanh/tan-method that is discussed usually in the nonlinear partial differential equations is presented to solve nonlinear polynomial differential-difference equations. As a concrete example, several solitary wave and periodic wave solutions for the chain which is related to the relativistic Toda lattice are derived. Some systems of the differential-difference equations that can be solved using our approach are listed and a discussion is given in conclusion.

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