

Integrability of the Spin System

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ABSTRACT

In this research, for the first time a two-layer coupled spin system is proposed. Among the nonlinear evolution equations the integrable ones are of special interest because only in this case it is possible to conduct a detailed and in-depth theoretical research of the model. Therefore, we test our model on integrability using the methods of soliton theory. Generalizing the conclusions and laws, formulated for low-layer spin systems we have shown that the class of important integrable nonlinear evolution equations in $(1 + 1)$ dimension can be associated with the movement of two-dimensional curves. In this construction, the geometric invariants define some important conserved quantities related with two interacting curves / surfaces, as well as with the corresponding nonlinear evolution equations.