

Geometry and Exact Soliton Solutions of the Integrable $\mathfrak{su}(3)$ -Spin System

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ABSTRACT

We construct a Darboux transformation of the integrable $\mathfrak{su}(3)$ -valued spin system called the Γ -spin system. Using the Darboux transformation, the 1-soliton and 2-soliton solutions of the Γ -spin system are found. Finally, the exact relation between the Γ -spin system and the integrable 2-layer M-LIII equation and their geometry are discussed.