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Dark and antidark solitons for the defocusing coupled Sasa-Satsuma system by the Darboux transformation

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Abstract

In this article, we construct the N-fold Darboux transformation for the defocusing coupled Sasa-Satsuma system which describes the simultaneous propagation of two nonlinear waves in optical fibers with higher order effects. With the non-zero constant background as a seed, we derive the dark and antidark soliton solutions from the once-iterated formula. We find that this coupled system can exhibit the dark-dark, dark-antidark and antidark-dark vector solitons.

Keywords: Soliton, Darboux transformation, Defocusing coupled Sasa-Satsuma system

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