Riemann-Hilbert problem associated with the vector Lakshmanan-Porsezian-Daniel model in the birefringent optical fibers

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Abstract

In this paper, we investigate vector Lakshmanan-Porsezian-Daniel (VLPD) model which can be used to describe the ultrashort pulses in the birefringent optical fiber. Based on the unified transformation method, the Riemann-Hilbert problem is introduced and initial-boundary value problems of the VLPD model are studied. By solving the formulated matrix Riemann-Hilbert problem, the potential function solutions of the VLPD model can be reconstructed. Moreover, that the spectral functions are not independent but meet the so-called global relation is shown.

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