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Darboux transformations and solutions of nonlocal Hirota and Maxwell-Bloch equations.

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Summary: In this paper, based on the Hirota and Maxwell-Bloch (H-MB) system and its application in the theory of the femtosecond pulse propagation through an erbium doped fiber, we define two kinds of nonlocal Hirota and Maxwell-Bloch (NH-MB) systems, namely, $PT$-symmetric NH-MB system and reverse space-time NH-MB system. Then, we construct the Darboux transformations of these NH-MB systems. Meanwhile, we derive the explicit solutions by the Darboux transformations.

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Darboux transformation; explicit solution; nonlocal Hirota and Maxwell-Bloch system

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