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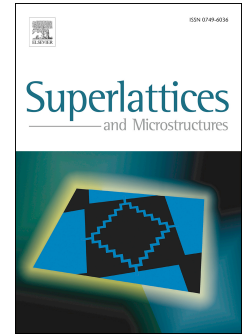
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# Vector single- and double-hump solitons for the coupled Sasa-Satsuma equations in optical media

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## Abstract

In this paper, the coupled Sasa-Satsuma equations are investigated for the propagation of the ultrashort pulse in such optical media as multi-mode and birefringent fibers. With the Hirota method and introduction of three auxiliary functions, a different bilinear form is obtained. Vector one- and two-soliton solutions in the bright-bright form are constructed. Based on the vector one-soliton solutions, parametric conditions for the existence of the vector single- and double-hump solitons are presented. From the vector two-soliton solutions, elastic and inelastic interactions can both be observed between the (i) two vector single-hump solitons, (ii) two vector double-hump solitons, and (iii) vector single- and double-hump solitons.

*Keywords:* Coupled Sasa-Satsuma equations; Vector soliton; Single-hump soliton; Double-hump soliton; Soliton interaction

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