
Validity of the Camassa-Holm equation for elastic waves

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Abstract

In a recent study [1], using a double-asymptotic expansion, the Camassa-Holm equation has been derived to model unidirectional propagation of waves in a nonlocal and nonlinear elastic medium. In the present work, we discuss rigorously the validity of the Camassa-Holm equation for elastic waves and give uniform estimates for the error terms in suitable norms with respect to the small parameters measuring the nonlinear and dispersive effects.

References

- [1] H.A. Erbay, S. Erbay, A. Erkip, “Derivation of the Camassa-Holm equations for elastic waves“, *Physics Letters A* 379, 956-961 (2015).

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