

Article Abstract

Title:	The physical meaning of a nonlinear evolution equation of the fourth order relating to locally and non-locally supercritical waves
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Abstract:	In this paper the physical meaning of a nonlinear partial differential equation (nPDE) of the fourth order relating to wave theory is deduced to the first time. The equation under consideration belongs to a class of less studied nPDEs and an explicit physical meaning is not known until now. This paper however bridges the gap between some known results and a concrete application concerning wave theory. We show how one can derive locally supercritical solitary waves as well as locally and non-locally forced supercritical waves and analytical solutions are given explicitly.
Keywords:	Nonlinear partial differential equations, evolution equations, supercritical solitary waves, locally supercritical waves, non-locally supercritical waves.