

论文
求解非线性悬梁方程行波解的变分算法—Mountain Pass算法

陈越

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摘要:

关键词:

A VARIATIONAL NUMERICAL METHOD FOR FINDING THE TRAVELING WAVES OF NONLINEAR SUSPENSION BEAM EQUATIONS - THE MOUNTAIN PASS ALGORITHM

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Abstract:

On solving differential equations, the classical numerical algorithms require us to have some knowledge of the solutions before we find them. For examples, to solve an ordinary differential equation of order 4, the classical Runge-Kutta method requires the initial data of the solution together with its first, second, and third derivatives; the generalized Newton's method depends severely on the initial guess; etc. This paper presents a variational algorithm, based on the Mountain Pass theory, for solving the traveling wave solutions of nonlinear suspension beam equations. Some results of the numerical experiments are shown to indicate that this algorithm does overcome some of the shortcomings of the classical methods.

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