

**Chen Guowang, Wang Shubin**

***Existence and non-existence of global solutions for nonlinear hyperbolic equations of higher order***

Comment.Math.Univ.Carolinae 36,3 (1995) 475-487.

**Abstract:** The existence and uniqueness of classical global solution and blow up of non-global solution to the first boundary value problem and the second boundary value problem for the equation

$$u_{tt} - \alpha u_{xx} - \beta u_{xxtt} = \varphi(u_x)_x$$

are proved. Finally, the results of the above problem are applied to the equation arising from nonlinear waves in elastic rods

$$u_{tt} - [a_0 + na_1(u_x)^{n-1}] u_{xx} - a_2 u_{xxtt} = 0.$$

**Keywords:** nonlinear hyperbolic equation, initial boundary value problem, classical global solution, blow up of solutions

**AMS Subject Classification:** 35L35