

FINITE TIME BLOW-UP AND GLOBAL SOLUTIONS FOR A CLASS OF FINITELY DEGENERATE PSEUDO-PARABOLIC EQUATION

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Abstract

In this paper, a class of finitely degenerate pseudo-parabolic equation, are studied. By a potential well method, we obtain a threshold result for the solutions to exist globally or to blow up in finite time for sub-critical and critical initial energy. The asymptotic behavior of the global solutions, blow-up rate, a necessary and sufficient condition for blow-up solution, a upper bound and a lower bound for blow-up time of local solution are also given. When the initial energy is super critical, an abstract criterion is given for the solutions to exist globally or to blow up in finite time, in terms of two variational numbers. These generalize some recent results obtained in (missing citation) and correct the proof of some results obtained by R. Xu in (missing citation) and (missing citation)

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References