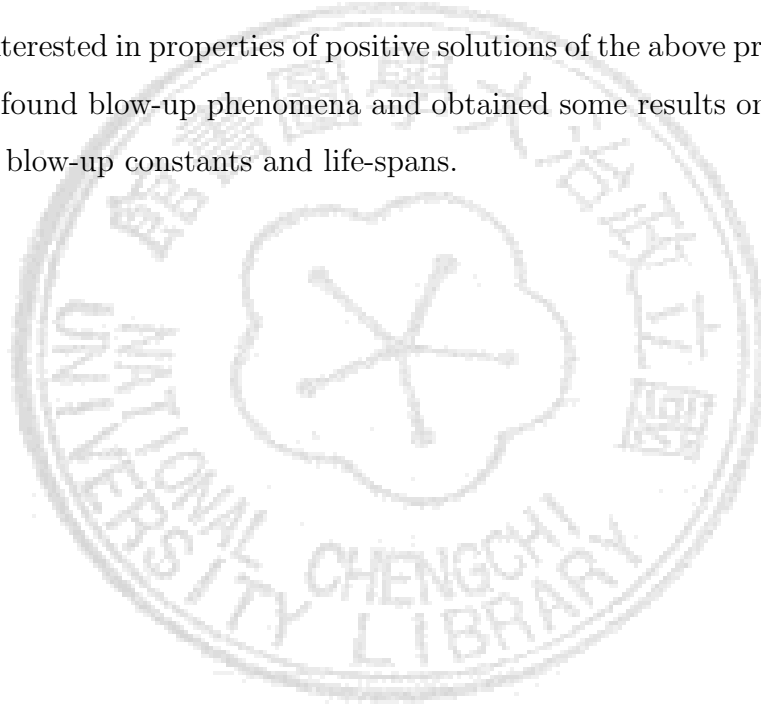


Abstract

In this paper we study the following initial value problem for the non-linear equation,

$$\begin{cases} u''(t) = u'(t)^q(c_1 + c_2u(t)^p), & p, q \geq 1, c_1^2 + c_2^2 \neq 0, \\ u(0) = u_0, u'(0) = u_1. \end{cases}$$

We are interested in properties of positive solutions of the above problem. We have found blow-up phenomena and obtained some results on blow-up rates, blow-up constants and life-spans.



¹There are more discussion which concern nonlinear differential equation in [?] and [?].

中文摘要

在這一篇論文中我們討論的是下列這個非線性初值問題：

$$\begin{cases} u''(t) = u'(t)^q(c_1 + c_2u(t)^p), & p, q \geq 1, c_1^2 + c_2^2 \neq 0, \\ u(0) = u_0, u'(0) = u_1. \end{cases}$$

我們關注於上述問題正解的一些性質。我們發現了一些爆破 (Blow-up) 現象，並獲得一些結果，有關爆破率 (Blow-up rate)、爆破常數 (Blow-up constant) 以及爆破時間 (Blow-up time)。

