

Exponential Stability of the Traveling Fronts for a Pseudo-Parabolic Fisher-KPP Equation

Xueli Bai* Yang Cao† Lina Wang‡

Abstract

This paper is concerned with the stability of traveling front solutions for a pseudo-parabolic Fisher-KPP equation. By applying geometric singular perturbation method, special Evans function estimates, detailed spectral analysis and C_0 semigroup theories, all the traveling front solutions with non-critical speeds are proved to be locally exponentially stable in some appropriate exponentially weighted spaces.

keywords: Singular perturbation method, exponential stability, traveling fronts, spectral analysis, Evans function

*Center for PDE, East China Normal University, Shanghai 200241, China;

†School of Mathematical Sciences, Dalian University of Technology, 116024, China

‡Center for PDE, East China Normal University, Shanghai 200241, China; wanglina147@126.com