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LINEARIZED STABILITY FOR DEGENERATE AND SINGULAR SEMILINEAR AND QUASILINEAR PARABOLIC PROBLEMS: THE LINEARIZED SINGULAR EQUATIONS

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Dedicated to Ioan I. Vrabie — a great mathematician and a great person

Abstract. We study some linear eigenvalue problems for the Laplacian operator with singular absorption or/and source coefficients arising in the linearization around positive solutions to some quasilinear degenerate parabolic equations and singular semilinear parabolic problems as well. We show that the linearization process applies even if the coefficients behave singularly with the distance to the boundary to the exponent two. This improves previous references in the literature. Applications to the above mentioned nonlinear problems are also presented.

1. Introduction

In this paper we study some linear eigenvalue problems with singular coefficients arising in the linearization around positive solutions to some quasilinear degenerate parabolic equations and singular semilinear parabolic problems as

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