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## Preface

Degenerate and singular parabolic equations have been the subject of extensive research for the last 25 years but the issue of the Harnack inequality has remained basically open. Recently considerable progress has been made in this area to the point that the theory is reasonably complete, — except for the singular subcritical range — both for the  $p$ -Laplacian and the porous medium equations.

This monograph represents a comprehensive treatment of the Harnack inequality for nonnegative solutions to  $p$ -Laplace and porous medium type equations, starting from the notion of solution and building all the necessary technical tools. The work is solely mathematical in nature, highlights the main issues and the problems that still remain open, and its aim is to introduce a novel set of tools and techniques that provide a better understanding of the notion of degeneracy and/or singularity in partial differential equations.

The book is self-contained. The readership is aimed at all professionals active in the field, and also at advanced graduate students who are interested in understanding the main issues of this fascinating research field.

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