

Yamabe-type equations on complete, noncompact manifolds

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Abstrak

The aim of this monograph is to present a self-contained introduction to some geometric and analytic aspects of the Yamabe problem. The book also describes a wide range of methods and techniques that can be successfully applied to nonlinear differential equations in particularly challenging situations. Such situations occur where the lack of compactness, symmetry and homogeneity prevents the use of more standard tools typically used in compact situations or for the Euclidean setting.

After a self-contained treatment of the geometric tools used in the book, readers are introduced to the main subject by means of a concise but clear study of some aspects of the Yamabe problem on compact manifolds. This study provides the motivation and geometrical feeling for the subsequent part of the work. In the main body of the book, it is shown how the geometry and the analysis of nonlinear partial differential equations blend together to give up-to-date results on existence, nonexistence, uniqueness and a priori estimates for solutions of general Yamabe-type equations and inequalities on complete, non-compact Riemannian manifolds.