

## *Editorial*

# **Sign-Changing Solutions to Equations of Elliptic Type**

**Wenming Zou,<sup>1</sup> Thomas Bartsch,<sup>2</sup> Norimichi Hirano,<sup>3</sup>  
Martin Schechter,<sup>4</sup> and Zhi-Qiang Wang<sup>5</sup>**

<sup>1</sup> *Department of Mathematical Sciences, Tsinghua University, Beijing 100084, China*

<sup>2</sup> *Mathematisches Institut, University Giessen, Arndtstr. 2, 35392 Giessen, Germany*

<sup>3</sup> *Graduate School of Environment and Information Science, Yokohama National University, Tokiwadai, Yokohama 240-8501, Japan*

<sup>4</sup> *Mathematics Department, University of California, Irvine, CA 92697-3875, USA*

<sup>5</sup> *Department of Mathematics and Statistics, Utah State University, Logan, UT 84322-4205, USA*

Correspondence should be addressed to Wenming Zou, wzou@math.tsinghua.edu.cn

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The equation of elliptic type is one of the most important equations which is closely related to the real world. The studies of the existence of solutions for elliptic problems under various boundary conditions have received much attention over the last decades. Among them, the number of solutions, the geometrical and topological properties for those solutions are essentially the subject matter on this line. In the recent years, there has been an increasing interest to develop a theory by which one can obtain much more information on the solutions. In particular, the nodal properties of solutions to elliptic equations are becoming increasingly popular. The central theme of the current special issue is about the sign-changing solutions to equations of elliptic type.

The first paper of this special issue addresses the multiplicity result for antisymmetric sign changing solutions of an elliptic equations defined on a smooth compact-connected Riemannian manifold without boundary and with dimension greater than one. They obtain the multiplicity of the sign-changing solutions which change sign exactly once. In particular, the number of solutions depends on the Poincaré polynomial.

The second paper presents the study of the asymptotic behaviour for the second eigenvalue of the  $p$ -Laplacian operator as  $p$  goes to 1. In the particular case of a planar disc, it is possible to show that the second eigenfunctions are nonradial if  $p$  is close enough to 1. The main goal of the third paper is to present multiple solutions results for elliptic inclusions of Clarke's gradient type under Dirichlet boundary condition involving the  $p$ -Laplacian which, in general, depend on two parameters. The authors prove the existence of multiple constant-sign