

Global bifurcation for elliptic semilinear indefinite problems on \mathbf{R}^N

Mythily Ramaswamy

Tata Institute for Fundamental Research at Bangalore, India

Abstract

For elliptic semilinear problems in bounded domains, the bifurcation theory gives the global branches of positive solutions, bifurcating from the first eigenvalue of the associated compact operator corresponding to the elliptic problem. However, in \mathbf{R}^N , the compactness of Sobolev embeddings is no longer available and the above theory is not directly applicable. Such difficulties can be overcome by using suitable weight functions or by approximation by problems posed in bounded domains. We show how these techniques apply to an elliptic semilinear problem with sign changing power nonlinearity.