On non-local nonlinear elliptic boundary value problems involving an eigenvalue problem

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Abstract

In this talk, we will consider the existence and multiplicity of solutions for a class of non-local elliptic boundary value problems with superlinear source functions are investigated in this paper. Using variational methods, we examine the changes arise in the solution behaviors as a result of the non-local effect. Comparisons are made of the results here with those of the elliptic boundary value problem in the absence of the non-local term under the same prescribed conditions to highlight this effect of non-locality on the solution behaviors. Our results here demonstrate that the complexity of the solution structures is significantly increased in the presence of the non-local effect with the possibility ranging from no permissible positive solution to three positive solutions and, contrary to those obtained in the absence of the non-local term, the solution profiles also vary depending on the superlinearity of the source functions. This work joint with Ching-yu Chen, Yueh-cheng Kuo and Kuan-Hsiang Wang.