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Ekeland's Variational Principle for a Fractional $p(x,y)$ -Laplacian Eigenvalue Problem

Communication Info

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Abstract

Under appropriate assumptions and by applying Ekeland's variational principle [3], we prove the existence of at least one nontrivial weak solution to a problem involving the fractional $p(x,y)$ -Laplacian operator with nonlocal Neumann boundary conditions.

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References

[1] A. Bahrouni and V. D. Radulescu, *On a new fractional Sobolev space and applications to nonlocal variational problems with variable exponent*, Discrete Contin. Dyn. Syst. Ser. S, 2018, 11(3), 379–389.

[2] N. T. Chung, *Eigenvalue Problems for Fractional $p(x, y)$ -Laplacian Equations with Indefinite Weight*, Taiwanese J. Math., 2019, 23(5), 1153–1173.

[3] I. Ekeland, *On the variational principle*, J. Math. Anal. Appl., 1974, 47, 324–353.

[4] U. Kaufmann, J. D. Rossi and R. Vidal, *Fractional Sobolev spaces with variable exponents and fractional $p(x)$ -Laplacians*, Electron. J. Qual. Theory Differ. Equ., 2017, 76, 1–10.

[5] D. Mugnai and E. Proietti Lippi, *Neumann fractional p -Laplacian: Eigenvalues and existence results*, Nonlinear Anal., 2019, 188, 455–474.