

## GENERALIZED LERAY–SCHAUDER NONLINEAR ALTERNATIVES FOR GENERAL CLASSES OF MAPS

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**Abstract.** New Leray–Schauder nonlinear alternatives are presented. These coincidence type results are established for set-valued maps.

**Key Words and Phrases:** Coincidence points, nonlinear alternatives.

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### REFERENCES

- [1] A. Ben Amar, D. O'Regan, *Topological Fixed Point Theory for Singlevalued and Multivalued Mappings with Applications*, Springer, Cham, 2016.
- [2] X.P. Ding, W.K. Kim, K.K. Tan, *A selection theorem and its applications*, Bull. Austral. Math. Soc., **46**(1992), 205-212.
- [3] G. Fournier, A. Granas, *The Lefschetz fixed point theorem for some classes on non-metrizable spaces*, J. Math. Pures Appl., **52**(1973), 271-283.
- [4] M. Furi, P. Pera, *A continuation method on locally convex spaces and applications to ordinary differential equations on noncompact intervals*, Annales Polonici Mathematici, **47**(1987), 331-346.
- [5] A. Granas, J. Dugundji, *Fixed Point Theory*, Springer-Verlag, New York, 2003.
- [6] D. O'Regan, *Nonlinear alternatives for multivalued maps with applications to operator inclusions in abstract spaces*, Proc. Amer. Math. Soc., **127**(1999), 3557-3564.
- [7] D. O'Regan, *Furi-Pera type theorems for the  $U_C^\kappa$ -admissible maps of Park*, Math. Proc. R. Ir. Acad., **102A**(2002), 163-173.
- [8] D. O'Regan, *A nonlinear alternative for maps with continuous selections*, Communications in Applied Analysis, **16**(2012), 175-178.
- [9] D. O'Regan, R. Precup, *Fixed point theorems for set-valued maps and existence principles for integral inclusions*, J. Math. Anal. Appl., **245**(2000), 594-612.

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