

Galerkin-like method for integro-differential inclusions

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In this talk, we discuss the Galerkin-like method to deal with first-order integro-differential inclusions. Under compactness or monotonicity conditions, we obtain new results for the existence of solutions for this class of problems, which generalize existing results in the literature and give new insights for differential inclusions with an unbounded right-hand side.

The effectiveness of the proposed approach is illustrated by providing new results for nonconvex state-dependent integro-differential sweeping processes, where the right-hand side is unbounded, and the classical theory of differential inclusions is not applicable. It is the first result of this kind.

Finally, we provide an application to the existence of an optimal control problem governed by nonconvex state-dependent integro-differential sweeping processes in finite dimensions.

- [1] P. Pérez, M. Torres-Valdebenito and E. Vilches. Galerkin-like method for integro-differential inclusions with application to state-dependent sweeping processes. *arXiv:2306.07821*.