Seminário de Análise

Approximate controllability: a different approach

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Abstract. This talk treats the approximate controllability of fractional differential systems of Sobolev type in Banach spaces. First, we characterize the properties on the norm continuity and compactness of some resolvent operators (also called solution operators). And then, via the obtained properties on resolvent operators and fixed point technique, we give some approximate controllability results for Sobolev type fractional differential systems in the Caputo and Riemann-Liouville fractional derivatives, with order $1 < \alpha < 2$. This, in contrast to the usual development, follows in part the ideas of [1] and [2] to suppose certain properties on the resolvent operators to obtain approximate controllability – namely, the norm continuity and compactness.

References

[1] Z. Fan, Approximate controllability of fractional differential equations via resolvent operators. Adv. Diff. Equat. 54 (2014), DOI: 10.1186/1687-1847-2014-54.

[2] G. Mophou, G. N'Guérékata: Controllability of semilinear neutral fractional functional evolution equations with infinite delay. Nonlinear Studies 18, no. 2 (2011), 195-209.

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[1]joint work with Y. K. Chang (Xidian University, China) and Rodrigo Ponce (U. de Talca, Chile)