

Inverse Problem for Abstract Differential Inclusions

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Abstract

Inverse problems arise naturally in many areas of mathematics and applied sciences, where the goal is to recover unknown components of a system from indirect or incomplete observations. These problems become more challenging when the governing dynamics are described by differential inclusions, since such systems involve multivalued nonlinearities and uncertainty in their evolution. In this talk, we study an inverse problem for abstract semilinear differential inclusions, where the aim is to identify unknown elements of the system using additional observational data. We establish the existence of mild solutions for the considered inverse problem and further investigate the continuous dependence of solutions on the initial data. Our analysis is mainly based on semigroup theory, set-valued analysis, Banach fixed point theorem, and Grönwall's inequality. In addition, an example will be presented to demonstrate the applicability and effectiveness of the obtained results.

References

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