
Nonlocal problem in Hilbert spaces

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Abstract

We consider nonlinear differential inclusions both of first and second order in a separable Hilbert space compactly embedded in a Banach space. A wide family of nonlocal boundary value problems is treated, including periodic, anti-periodic, mean value and multipoint conditions. We give existence results based on an approximation solvability method and on a Scorza Draconi-type result for multivalued maps. We make use of a continuation principle in a finite dimensional setting, embedding the problem into a family of linearized problems depending on a parameter. The transversality condition is strictly localized on the boundary of a suitable open set. In the second order case we assume suitable Nagumo conditions. We conclude the talk showing some applications to integro-differential equations arising from a nonlocal dispersal model or from the telegraph equation. The work is in collaboration with I. Benedetti (Perugia), N.V. Loi (Petrovietnam) and L. Malaguti (Modena and Reggio Emilia).

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