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CIDMA] CENTRO DE I&D EM MATEMÁTICA E APLICAÇÕES
CENTER FOR R&D IN MATHEMATICS AND
APPLICATIONS

SEMINAR

Grupo de Análise Funcional e Aplicações
Functional Analysis and Applications Group

Coupled systems of Hammerstein-type integral equations with sign-changing kernels on bounded and unbounded intervals

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Abstract

In this work we consider a generalized coupled system of two integral equations of Hammerstein-type, where the kernel functions may change sign, as well as remain positive on some subintervals, and the nonlinearities may have discontinuities. Some other new features: The integral equations contain nonlinearities depending on several derivatives of both variables and, moreover, the derivatives can be of different order on each variable and each equation, which increases the range of applications. A new type of cone is introduced, where some requirements may be satisfied only on some subintervals of the domain. An application to a coupled system composed by a fourth and second order equations, which models the bending of the main-road of suspension bridges, will be presented. This approach is generalized to coupled system of integral equations defined on the real line, where the equiconvergence at infinity is used to recover the compactness of the correspondent operators.

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