Abstract existence result for parabolic quasi-variational inequalities

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Abstract

In this talk we discuss an abstract existence result for a parabolic quasi-variational inclusion in a Hilbert space H, which is governed by a functional F(u,v)on HxH, coupled with a sort of feedback control system. Our functional F(u,v) is proper, l.s.c. and convex in u, and v is a non-local parameter. Moreover, our set-up requires some relationship between two variables u and v, say v=Au; in most cases A is a nonlinear integral or integro-differential operator. Roughly speaking, our abstract problem is a parabolic inclusion generated by the subdifferential of F(u,v) with respect to variable u, depending the unknown parameter v=Au. This formulation is motivated by many real world problems, for instance, superconductivity phenomemon with gradient constraint, bacteria's activity in fluids and economic growth with technological innovation, etc..

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