Optimal control for rate-independent systems

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Rate independent systems can be formulated based on an energy functional and a dissipation potential that is assumed to be convex, lower semicontinuous and positively homogeneous of degree one. Here, we will focus on the nonconvex case meaning that the energy is not convex. In this case, the solution typically is discontinuous in time. There exist several (in general not equivalent) notions of weak solutions. We focus on so-called balanced viscosity solutions, discuss the properties of solution sets and discuss the well posedness of an optimal control problem for such systems. If time permits we also address an existence result with discontinuous loads. This is joint work with Chiara Zanini (Torino).