RELAXATION OF OPTIMAL CONTROL PROBLEMS AND LINEAR-QUADRATIC SYSTEMS

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Abstract. The paper suggests an approach to characterizing global solutions for optimal control problems with integral objective functions. The approach is based on relaxation of the system’s states to probability measures on the system’s state space. The associated relaxed control problem falls, typically, to the scope of convex optimization problems with linear equality constraints. Under additional conditions assuming, in particular, that the objective function and state equation are linear-quadratic in the state variable, the equivalency of the original and relaxed problems is proved and a successive solution approximation method is constructed.

Keywords. global optimization, non-convex optimization, optimal control, relaxation of optimization problems, successive optimization methods
References


Received April 2011; revised August 2011; revised September 2011; revised October 2011.
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