On the existence of optimal solutions for infinite horizon optimal control problems
Dean A. Carlson
1984

We consider various classes of optimal solutions for infinite horizon optimal control problems, where the objective functional is described by an improper integral of the form

(DIAGRAM, TABLE OR GRAPHIC OMITTED...PLEASE SEE DAI)

As dictated by applications from mathematical economics we make no a priori assumption concerning the convergence of this integral. This leads to several concepts of optimality which have recently appeared in the literature.

Here we prove existence theorems for several types of optimality under conditions involving convexity of \( g \) in \( u \) only, thereby extending known results which involve assumptions of joint convexity in the pair \( (x,u) \). We extend our results to nonconvex problems and to multi-criteria problems.