Value Functions and Their Directional Derivatives in Parametric Nonlinear Programming

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Abstract

We study questions of existence and calculation of directional derivatives of value functions of nonlinear mathematical programming problems depending on parameters. To this end, we use the directional derivatives of the multivalued mappings, defined by the constraints of the problems; this approach was pioneered by Demyanov. We obtain sufficient conditions for existence and explicit formulas for calculating the directional derivatives of the first and second orders, under weaker hypotheses than those traditionally assumed.

Keywords

Nonlinear programming – Value function – Constraint qualifications – Directional derivatives

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