ICM 1998, Berlin, Aug. 18–27

Abstracts of Short Communications and Posters

Section:

17. Control Theory and Optimization

1991 MS Classification: 90,49, 26

Mititelu Stefan, Technical University of Civil Engineering of Bucharest, Romania

Optimality and duality in nonsmooth vector programming

Let A be a nonempty open set of R^n and a function $\varphi : A \to R$. Consider for φ at $x \in A$ a subdifferential of the form $\partial\varphi(x) = \{\xi \in R^n | \varphi^0(x;\nu) \geq \xi'\nu, \forall v \in R^n\}$ where $\varphi^0(x;\nu) = y \to x; \lambda \downarrow 0[f(y+\lambda\nu) - f(y)]/\lambda$. Let $(PV)x \in Df(x)$ be a nonsmooth vector program where $D = \{x \in A | g(x) \leq 0, h(x) = 0, x \in X\}, f : ArightarrowR^p, g : A \to R^m, h : A \to R^S$ and X is a nonempty part of A. Efficiency conditions of Kuhn-Tucker type as $x^0 \in D$ to be a solution Pareto for (PV) are established, using the subdifferentials of the component functions of f, g and h at x^0. A dual having as objective the vector Lagrangian of (PV) is associated to (PV) and a duality Wolfe is developed.

Reference: S. Mititelu, Nonconvex subsdifferential calculus, Analele Universitãtii “Ovidius” Constanta, ser. Matematica **3** (1995) 1, 118 - 126.