

Wang, Yuntong

A characterization of paratingent cone and P -subderivative with applications in nonsmooth analysis. (English) Zbl 0744.49006

Acta Math. Sin., New Ser. 7, No. 2, 181-192 (1991).

Characterizations of the paratingent cone to an open set at a boundary point and the P -directional derivative of a real-valued continuous function are given by using the contingent cone and the contingent directional derivative, respectively. It is shown that these results are useful to establish sufficient condition for strict differentiability of a continuous function. The P -subderivative is also introduced and its applications to a continuous mathematical programming problem subject to a set constraint is reported.

Reviewer: X.Q.Yang (Kensington)

MSC:

[49J52](#) Nonsmooth analysis

[90C48](#) Programming in abstract spaces

Keywords:

[paratingent cone](#); [P-directional derivative](#); [contingent cone](#); [contingent directional derivative](#); [P-subderivative](#)

Full Text: [DOI](#)

References:

- [1] Aubin, J. P. and Ekeland, I., *Applied Nonlinear Analysis*, Wiley Interscience, New York, 1984. · [Zbl 0641.47066](#)
- [2] Clarke, F. H., *Optimization and Nonsmooth Analysis*, Wiley Interscience, New York, 1983. · [Zbl 0582.49001](#)
- [3] Cornet, B., *Contributions à la théorie mathématique des mécanismes dynamiques d' allocation des ressources*, Thèse, Univ. Paris IX, 1981.
- [4] Borwein, J. M. and Strojwas, H. M., *Proximal analysis and boundaries of closed sets in Banach Space, Part 1: Theory*, *Can. J. Math.*, 38 (1986), 431–452; *Part 2: Applications*, 39 (1987), 428–472. · [Zbl 0577.46011](#) · [doi:10.4153/CJM-1986-022-4](#)
- [5] Penot, J. P., *A characterization of tangential regularity*, *Nonlinear Analysis*, 5 (1981), 625–663. · [Zbl 0472.58010](#) · [doi:10.1016/0362-546X\(81\)90079-1](#)
- [6] Rockafellar, R. T. and Wets, R. J. B., *Variational systems, A introduction*, *Lectures Notes, in Math.*, 1091 (1985), 1–51, Springer-Verlag. · [doi:10.1007/BFb0098800](#)
- [7] Shi Shuzhong, *Choquet theorem and nonsmooth analysis*, *J. Math. Pures et Appl.*, 67 (1988), 411–432. · [Zbl 0679.49015](#)
- [8] Treiman, J. S., *Characterization of Clarke's tangent and normal cones in finite and infinite dimensions*, *Nonlinear Analysis*, 7 (1983), 771–783. · [Zbl 0515.49013](#) · [doi:10.1016/0362-546X\(83\)90033-0](#)
- [9] Ward, D. E., *Nonsmooth calculus in finite dimensions*, *SIAM. J. Control and Optim.* 25 (1987), 1312–1340. · [Zbl 0633.46043](#) · [doi:10.1137/0325072](#)
- [10] Rockafellar, R. T., *The Theory of Subgradient and its Applications to Problems of Optimization of Convex and Nonconvex Functions*, Heldermann Verlag, W. Berlin, 1981. · [Zbl 0462.90052](#)
- [11] Rockafellar, R. T., *Generalized subgradients in mathematical programming*, in *Mathematical Programming, The State of Art*, A. Bachem, M. Grötschel, B. Korte ed., Springer-Verlag, 1982, 365–390.

This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.