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SOME RESULTS ON $(\rho, \mathbf{b}, \mathbf{d})$–VARIATIONAL INEQUALITIES

SAVIN TREANŢĂ

Abstract. In this paper, by using a dual gap functional and some working hypotheses, the solution set is investigated for a variational-type inequality governed by $(\rho, \mathbf{b}, \mathbf{d})$-convex path-independent curvilinear integral functional.

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REFERENCES

[1] M. ALSHAHRANI, S. AL-HOMIDAN AND Q.H. ANSARI, *Minimum and maximum principle sufficiency properties for nonsmooth variational inequalities*, Optim. Lett., **10** (2016), 805–819.
[2] Q.H. ANSARI, *An introduction to variational-like inequalities, In book: Fixed Point Theory, Variational Analysis, and Optimization. Editors: Saleh Abdullah R. Al-Mezel, Falleh Rajallah M. Al-Solamy, Qamrul Hasan Ansari*, CRC Press (2014).
[3] J.V. BURKE AND M.C. FERRIS, *Weak sharp minima in mathematical programming*, SIAM J. Control Optim., **31** (1993), 1340–1359.
[4] F.H. CLARKE, *Functional Analysis, Calculus of Variations and Optimal Control*, Graduate Texts in Mathematics, vol. 264. Springer, London (2013).
[5] M.C. FERRIS AND O.L. MANGASARIAN, *Minimum principle sufficiency*, Math. Program., **57** (1992), 1–14.
[6] J.-B. HIRIART-URRUTY AND C. LEMARÉCHAL, *Fundamentals of Convex Analysis*, Springer, Berlin (2001).
[7] Y.H. HU AND W. SONG, *Weak sharp solutions for variational inequalities in Banach spaces*, J. Math. Anal. Appl., **374** (2011), 118–132.
[8] A. JAYSWAL AND S. SINGH, *Characterization of weakly sharp solutions of a variational-type inequality with convex functional*, Ann. Oper. Res., **269** (2018), 297–315.
[9] Y. LIU AND Z. WU, *Characterization of weakly sharp solutions of a variational inequality by its primal gap function*, Optim. Lett., **10** (2016), 563–576.
[10] P. MARCOTTE AND D. ZHU, *Weak sharp solutions of variational inequalities*, SIAM J. Optim., **9** (1998), 179–189.
[11] M. PATRIKSSON, *A unified framework of descent algorithms for nonlinear programs and variational inequalities*, PhD. Thesis, Department of Mathematics, Linköping Institute of Technology, (1993).
[12] S. TREANŢĂ, *PDE-constrained vector variational problems governed by curvilinear integral functionals*, Appl. Anal. Optim., **3** (2019), 83–101.
[13] S. TREANŢĂ, *Higher-order Hamilton dynamics and Hamilton-Jacobi divergence PDE*, Comput. Math. Appl., **75** (2018), 547–560.
[14] S. TREANŢĂ, *Constrained variational problems governed by second-order Lagrangians*, Applic. Anal., 99 (2020), 1467–1484.
[15] S. TREANŢĂ, *On a modified optimal control problem with first-order PDE constraints and the associated saddle-point optimality criterion*, Eur. J. Control, 51 (2020), 1–9.
[16] S. TREANŢĂ, *On locally and globally optimal solutions in scalar variational control problems*, Mathematics, **7** (2019), 829.

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[17] S. TREANŢĂ, *Efficiency in generalized V-KT-pseudoinvex control problems*, Int. J. Control, 93 (2020), 611–618.
[18] S. TREANŢĂ, *KT-geodesic pseudoinvex control problems governed by multiple integrals*, J. Nonlin. Conv. Anal., **20** (2019), 73–84.
[19] S. TREANŢĂ, *On a new class of vector variational control problems*, Numer. Funct. Anal. Optim., **39** (2018), 1594–1603.
[20] S.K. ZHU, *Weak sharp efficiency in multiobjective optimization*, Optim. Lett., **10** (2016), 1287–1301.