Scientific Research OPEN ACCESS **Open** Access Conferences Home Journals Books New

Search Keywords, Title, Author, ISBN, ISSN

S	About Us	;	Jobs
	Open Special Issues Published Special Issues Special Issues Guideline IIM Subscription Most popular papers in IIM		
	About IIM News		
fuzzy	Frequently Asked Questions		
	Recommend to Peers		
	Recommend to Library		
nation	Contact Us		
" (in	Downloads:	149,	360
	Visits:	372,	802

Sponsors, Associates, and

- Home > Journal > Business & Economics | Computer Science & Communications > IIM Indexing View Papers Aims & Scope Editorial Board Guideline Article Processing Charges IIM> Vol.1 No.3, December 2009 OPEN ACCESS Linear Problems of Optimal Control of Fuzzy Maps PDF (Size: 271KB) PP. 139-144 DOI: 10.4236/iim.2009.13020 Author(s) Andrej V. PLOTNIKOV, Tatyana A. KOMLEVA ABSTRACT In the present paper, we show the some properties of the fuzzy R-solution of the control linear differential inclusions and research the optimal time problems for it. **KEYWORDS** fuzzy differential inclusions, control problems Cite this paper A. PLOTNIKOV and T. KOMLEVA, "Linear Problems of Optimal Control of Fuzzy Maps," Intelligent Inforr Management, Vol. 1 No. 3, 2009, pp. 139-144. doi: 10.4236/iim.2009.13020. References A. Marchaud, " Sur Les Champs De Demicones Et Equations Differentielles Du Premier Order [1] French) Bull. Soc. Math. France, No. 62, pp. 1- 38, 1934. A. Marchaund, " Sur les Champs Des Deme-Droites Et Les Equations Differentilles Du Premier [2] Ordre," (in French) Bull. Soc. Math., France, No. 63, pp. 1-38, 1934. Links >> [3] S. C. Zaremba, " Sur une extension de la notion d'equation differentielle," Comptes Rendus Acad. Sc., Paris, No. 199, pp. 1278-1280, 1934. T. Wazewski, "Systemes De Commande Et Equations Au Contingent," (in French) Bull. Acad. Polon. [4] Sci., Ser. Sci. Math. Astronom. Phys., No. 9, pp. 151-155, 1961. T. Wazewski, "Sur Une Condition Equivalente E L'equation Au Contingent," (in French) Bull. Acad. [5] Polon. Sci., Ser. Sci. Math. Astronom. Phys., No. 9, pp. 865-867, 1961. A. F. Filippov, " Classical solutions of differential equations with multi-valued right-hand side," SIAM [6]
 - J. P. Aubin and A. Cellina, "Differential inclusions," "Set-valued maps and viability theory," [7] Springer-Verlag, Berlin, Heidelberg, New York, Tokyo, 1984.

J. Control, No. 5, pp. 609-621, 1967.

- J. P. Aubin and H. Frankovska, "Set-valued analysis," Birkhauser, Systems and Control: Fundations [8] and Applications, 1990.
- M. Hukuhara, " Sur L'application Semi-Continue Dont La Valeur Est Un Compact Convexe," (in [9] French) Funkcial. Ekvac., No. 10, pp. 43-66, 1967.
- [10] M. Hukuhara, " Integration Des Applications Mesurables Dont La Valeur Est Un Compact Convexe," (in French) Funkcial. Ekvac., No. 10, pp. 205-223, 1967.
- [11] F. S. De Blasi, and F. Iervolino, " Equazioni Differentiali Con Soluzioni A Valore Compatto Convesso," Boll. Unione Mat.Ital., Vol. 2, No. 4-5, pp. 491-501, 1969.
- M. Kisielewicz, "Method of averaging for differential equations with compact convex valued [12] solutions," Rend. Mat., Vol. 9, No. 3, pp. 397-408, 1976.

- [13] T. A. Komleva and A. V. Plotnikov, "Differential inclusions with the Hukuhara derivative," Nonlinear Oscil. (N. Y.), Vol. 10, No. 2, pp. 229–245, 2007.
- [14] V. A. Plotnikov, A. V. Plotnikov, and A. N. Vityuk, "Differential equations with multivalued right-hand sides," Asymptotics Methods. (in Russian) Odessa, AstroPrint, pp. 354, 1999.
- [15] A. I. Panasyuk and V. I. Panasyuk, "Asymptotic optimization of nonlinear control systems," (in Russian) Izdat. Beloruss. Gos. Univ., Minsk, pp. 207, 1977.
- [16] A. I. Panasjuk, and V. I. Panasjuk, " An equation generated by a differential inclusion," (in Russian) Mat. Zametki, Vol. 27, No. 3, pp. 429–437, 1980.
- [17] A. I. Panasyuk, "Dynamics of sets defined by differential inclusions," (in Russian) Sibirsk. Mat. Zh. Vol. 27, No. 5, pp. 155–165, 206, 1986.
- [18] A. I. Panasyuk, " On the equation of an integral funnel and its applications," Differential Equations, Vol. 24, No. 11, pp. 1263–1271, 1988.
- [19] A. I. Panasyuk, "Equations of attainable set dynamics. I. Integral funnel equations," J. Optim. Theory Appl., Vol. 64, No. 2, pp. 349–366, 1990. "Equations of attainable set dynamics. II. Partial differential equations," J. Optim. Theory Appl., Vol. 64, No. 2, pp. 367–377, 1990.
- [20] A. I. Panasyuk, " Quasidifferential equations in a complete metric space under caratheodory-type conditions," Differential Equations, Vol. 31, No. 6, pp. 901–910, 1995. Differential Equations, Vol. 31, No. 8, pp. 1308–1317, 1995.
- [21] A. I. Panasyuk and V. I. Panasyuk, "Asymptotic turnpike optimization of control systems," (in Russian) " Nauka i Tekhnika," Minsk, pp. 296, 1986.
- [22] A. A. Tolstonogov, " On an equation of an integral funnel of a differential inclusion," (in Russian) Mat. Zametki, Vol. 32, No. 6, pp. 841–852, 1982.
- [23] A. I. Panasyuk, "Quasidifferential equations in a metric space," (in Russian) Differentsial'nye Uravneniya, Vol. 21, No. 8, pp. 1344–1353, 1985.
- [24] V. Plotnikov and P. Kitanov, " Continuous dependence of solutions of quasidifferential equations with impulses," Discrete Mathematics and Applications, Blagoevgrad, Vol. 5, pp. 238–245, 1994, Res. Math., " Neofit Rilski" South-West Univ. Publ. House, Blagoevgrad, 1995.
- [25] J. P. Aubin, " Mutational equations in metric spaces," Set- Valued Analysis, Vol. 1, No. 1, pp. 3– 46, 1993.
- [26] D. A. Ovsyannikov, " Mathematical methods for the control of beams," (in Russian) Leningrad. Univ., Leningrad, pp. 227, 1980.
- [27] V. I. Zubov, " Dynamics of controlled systems," (in Russian) Vyssh. Shkola, Moscow, pp. 286, 1982.
- [28] V. I. Zubov, "Stability of motion. Lyapunov methods and their application," (in Russian) Vyssh. Shkola, Moscow, pp. 232, 1984.
- [29] N. Kikuchi, " On contingent equations," Japan-United States Seminar on Ordinary Differential and Functional Equations, Kyoto, pp. 169–181, 1971, Lecture Notes in Math., Springer, Berlin, Vol. 243, 1971.
- [30] S. Otakulov, " A minimax control problem for differential inclusions," Soviet Math. Dokl., Vol. 36, No. 2, pp. 382–387, 1988.
- [31] S. Otakulov, " On the approximation of the time-optimality problem for controlled differential inclusions," Cybernet. Systems Anal., Vol. 30, No. 3, pp. 458–462, 1994.
- [32] A. V. Plotnikov, "Linear control systems with multivalued trajectories," (in Russian) Kibernetika (Kiev), No. 4, pp. 130–131, 1987.
- [33] A. V. Plotnikov, " Compactness of the attainability set of a nonlinear differential inclusion that contains a control," (in Russian) Kibernetika (Kiev), No. 6, pp. 116–118, 1990.
- [34] A. V. Plotnikov, " A problem on the control of pencils of trajectories," Siberian Math. J., Vol. 33, No. 2, pp. 351–354, 1992.
- [35] A. V. Plotnikov, "Two control problems under uncertainty conditions," Cybernet. Systems Anal., Vol. 29, No. 4, pp. 567–573, 1993.

- [36] A. V. Plotnikov, " Necessary optimality conditions for a nonlinear problems of control of trajectory bundles," Cybern. Syst. Anal., Vol. 36, No. 5, pp. 729–733, 2000.
- [37] A. V. Plotnikov, " Linear problems of optimal control of multiple-valued trajectories," Cybern. Syst. Anal., Vol. 38, No. 5, pp. 772–782, 2002.
- [38] A. V. Plotnikov and T. A. Komleva, " Some properties of trajectory bunches of controlled bilinear inclusion," Ukr. Math. J., Vol. 56, No. 4, pp. 586–600, 2004.
- [39] A. V. Plotnikov and L. I. Plotnikova, "Two problems of encounter under conditions of uncertainty," J. Appl. Math. Mech., Vol. 55, No. 5, pp. 618–625, 1991.
- [40] V. A. Plotnikov and A. V. Plotnikov, "Multivalued differential equations and optimal control," Applications of Mathematics in Engineering and Economics (Sozopol, 2000), Heron Press, Sofia, pp. 60–67, 2001.
- [41] A. V. Plotnikov, " Controlled quasidifferential equations and some of their properties," Differ. Equations, Vol. 34, No. 10, pp. 1332–1336, 1998.
- [42] L. A. Zadeh, "Fuzzy sets," Information and Control, No. 8, pp. 338–353, 1965.
- [43] O. Kaleva, "Fuzzy differential equations," Fuzzy Sets and Systems, Vol. 24, No. 3, pp. 301–317, 1987.
- [44] O. Kaleva, "The Cauchy problem for fuzzy differential equations," Fuzzy Sets and Systems, Vol. 35, No. 3, pp. 389– 396, 1990.
- [45] O. Kaleva, "The peano theorem for fuzzy differential equations revisited," Fuzzy Sets and Systems, Vol. 98, No. 1, pp. 147–148, 1998.
- [46] O. Kaleva, " A note on fuzzy differential equations," Nonlinear Anal., Vol. 64, No. 5, 2006. pp. 895– 900.
- [47] T. A. Komleva, L. I. Plotnikova, and A. V. Plotnikov, "Averaging of the fuzzy differential equations," Work of the Odessa Polytehnikal University, Vol. 27, No. 1, pp. 185–190, 2007.
- [48] T. A. Komleva, A. V. Plotnikov and N. V. Skripnik, "Differential equations with set-valued solutions," Ukrainian Mathematical Journal. (Springer New York) Vol. 60, No. 10, pp. 1540–1556, 2008.
- [49] V. Lakshmikantham, G. T. Bhaskar, and D. J. Vasundhara, "Theory of set differential equations in metric spaces," Cambridge Scientific Publishers, Cambridge, pp. 204, 2006.
- [50] V. Lakshmikantham and R. N. Mohapatra, "Theory of fuzzy differential equations and inclusions," Series in Mathematical Analysis and Applications, Taylor & Francis, Ltd., London, Vol. 6, pp. 178, 2003.
- [51] J. Y. Park and H. K. Han, " Existence and uniqueness theorem for a solution of fuzzy differential equations," Int. J. Math. Math. Sci., Vol. 22, No. 2, pp. 271–279, 1999.
- [52] J. Y. Park and H. K. Han, "Fuzzy differential equations," Fuzzy Sets and Systems, Vol. 110, No. 1, pp. 69–77, 2000.
- [53] A. V. Plotnikov and N. V. Skripnik, " Differential equations with clear and fuzzy multivalued right-hand sides," (in Russian) Asymptotics Methods, AstroPrint, Odessa, pp. 192, 2009.
- [54] S. Seikkala, " On the fuzzy initial value problem," Fuzzy Sets and Systems, Vol. 24, No. 3, pp. 319– 330, 1987.
- [55] D. Vorobiev and S. Seikkala, "Towards the theory of fuzzy differential equations," Fuzzy Sets and Systems, Vol. 125, No. 2, pp. 231–237, 2002.
- [56] J. P. Aubin, "Fuzzy differential inclusions," Probl. Control Inf. Theory, Vol. 19, No. 1, pp. 55–67, 1990.
- [57] V. A. Baidosov, "Differential inclusions with fuzzy right- hand side," Soviet Mathematics, Vol. 40, No. 3, pp. 567–569, 1990.
- [58] V. A. Baidosov, "Fuzzy differential inclusions," J. of Appl. Math. and Mechan., Vol. 54, No. 1, pp. 8– 13, 1990.

- [59] E. Hullermeier, " An approach to modelling and simulation of uncertain dynamical systems," Internat. J. Uncertain. Fuzziness Knowledge-Based Systems, Vol. 5, No. 2, pp. 117–137, 1997.
- [60] N. D. Phu and T. T. Tung, " Some properties of sheaf-solutions of sheaf fuzzy control problems," Electron. J. Differential Equations, No. 108, pp. 8, 2006. (Electronic) URL: http://ejde.math.txstate.edu.
- [61] N. D. Phu and T. T. Tung, " Some results on sheaf-solutions of sheaf set control problems," Nonlinear Anal., Vol. 67, No. 5, pp. 1309–1315, 2007.
- [62] N. D. Phu and T. T. Tung, "Existence of solutions of fuzzy control differential equations," J. Sci. Tech. Devel., Vol. 10, No. 5, pp. 5– 12, 2007.
- [63] T. I. V. Molchanyuk and A. V. Plotnikov, "Linear control systems with a fuzzy parameter," Nonlinear Oscil. (N. Y.) Vol. 9, No. 1, pp. 59– 64, 2006.
- [64] I. V. Molchanyuk and A. V. Plotnikov, " Necessary and sufficient conditions of optimality in the problems of control with fuzzy parameters," Ukrainian Math. J., Vol. 61, No. 3, pp. 457–463, 2009.
- [65] V. S. Vasil'kovskaya and A. V. Plotnikov, "Integro differential systems with fuzzy noise," Ukrainian Math. J., Vol. 59, No. 10, pp. 1482–1492, 2007.
- [66] C. V. Negoito and D. A. Ralescu, " Applications of fuzzy sets to systems analysis," A Halsted Press Book. John Wiley & Sons, New York-Toronto, Ont., pp. 191, 1975.
- [67] M. L. Puri and D. A. Ralescu, "Fuzzy random variables," J. Math. Anal. Appl., No. 114, pp. 409– 422, 1986.

Home | About SCIRP | Sitemap | Contact Us Copyright © 2006-2013 Scientific Research Publishing Inc. All rights reserved.