LIST OF MATHEMATICAL PUBLICATIONS

Prof. Dr. sc. nat. Hoang Xuan Phu

Institute of Mathematics
Vietnam Academy of Science and Technology
18 Hoang Quoc Viet Road
Hanoi, Vietnam

Research Articles

1. H. X. Phu, *Zur Stetigkeit der Lösung der adjungierten Gleichung bei Aufgaben der optimalen Steuerung mit Zustandsbeschränkungen*, Zeitschrift für Analysis und ihre Anwendungen, Vol. 3, No. 6, pp. 527–539, 1984.

2. H. X. Phu, *Lineare Steuerungsprobleme mit engen Zustandsbereichen*, Optimization, Vol. 16, No. 2, pp. 273–284, 1985.

3. H. X. Phu, *Lösung einer eindimensionalen regulären Aufgaben der optimalen Steuerung mit engen Zustandsbereichen anhand der Methode der Bereichsanalyse*, Optimization, Vol. 16, No. 3, pp. 431–438, 1985.

4. H. X. Phu, *Einige notwendige Optimalitätsbedingungen für einfache reguläre Aufgaben der optimalen Steuerung*, Zeitschrift für Analysis und ihre Anwendungen, Vol. 5, No. 5, pp. 465–475, 1986.

5. H. X. Phu, *Zur Lösung des Knickstab-Problems mit beschränkter Ausbiegung*, Zeitschrift für Analysis und ihre Anwendungen, Vol. 6, No. 4, pp. 371–384, 1987.

6. H. X. Phu, *Zur Lösung einer regulären Aufgabenklasse der optimalen Steuerung im Großen mittels Orientierungskurven*, Optimization, Vol. 18, No. 1, pp. 65–81, 1987.

7. H. X. Phu, *Zur Lösung eines Zermeloschen Navigationsproblems*, Optimization, Vol. 18, No. 2, pp. 225–236, 1987.

8. H. X. Phu, *Ein konstruktives Lösungsverfahren für das Problem des Inpolygons kleinsten Umfangs von J. Steiner*, Optimization, Vol. 18, No. 3, pp. 349–359, 1987.

9. H. X. Phu, *Some necessary conditions for optimality for a class of optimal control problems which are linear in the control variable*, Systems & Control Letters, Vol. 8, No. 3, pp. 261–271, 1987.

10. H. X. Phu, *A method for solving a class of optimal control problems which are linear in the control variable*, Systems & Control Letters, Vol. 8, No. 3, pp. 273–280, 1987.

11. H. X. Phu, *On the optimal control of a hydroelectric power plant*, Systems & Control Letters, Vol. 8, No. 3, pp. 281–288, 1987.

12. H. X. Phu, *Solution of some high-dimensional linear optimal control problems by the method of region analysis*, International Journal of Control, Vol. 47, No. 2, pp. 493–518, 1988.

13. H. X. Phu, *Linear optimal control problem of a system with circuit-free graph structure*, International Journal of Control, Vol. 48, No. 5, pp. 1867–1882, 1988.

14. H. X. Phu, *Investigation of some inventory problems with linear replenishment cost by the method of region analysis*, in Optimal Control Theory and Economic Analysis 3, Editor: G. Feichtinger, North-Holland, Amsterdam, pp. 195–221, 1988.

15. H. X. Phu, *Reguläre Aufgaben der optimalen Steuerung mit linearen Zustandsrestriktionen*, Zeitschrift für Analysis und ihre Anwendungen, Vol. 7, No. 5, pp. 431–440, 1988.

16. H. X. Phu, *Optimal control of a hydroelectric power plant with unregulated spilling water*, Systems & Control Letters, Vol. 10, No. 1, pp. 131–139, 1988.

17. H. X. Phu, *A solution method for regular optimal control problems with state constraints*, Journal of Optimization Theory and Applications, Vol. 62, No. 3, pp. 489–513, 1989.

18. H. X. Phu, *The Method of region analysis and its application for optimal control problems of hydroelectric power plants*, Proceedings of the Fourth European Consortium for Mathematics in Industry, pp. 309–313, B.G. Teubner Stuttgart and Kluwer Academic Publishers, the Netherlands, 1991.

19. H. X. Phu, *Investigation of a macroeconomic model by the method of region analysis*, Journal of Optimization Theory and Applications, Vol. 72, No. 2, pp. 319–332, 1992.

20. H. X. Phu, *Method of orienting curves for solving optimal control problems with state constraints*, Numerical Functional Analysis and Optimization, Vol. 12, No. 1&2, pp. 173–211, 1991.

21. N. Dinh and H. X. Phu, *Solving a class of regular optimal control problems with state constraints by the method of orienting curves*, Optimization, Vol. 25, No. 2&3, pp. 231–247, 1992.

22. N. Dinh and H. X. Phu, *Solving a class of optimal control problems which are linear in the control variable by the method of orienting curves*, Acta Mathematica Vietnamica, Vol. 17, No. 2, pp. 115–134, 1992.

23. N. Dinh and H. X. Phu, *The method of orienting curves and its application to an optimal control problem of hydroelectric power plants*, Vietnam Journal of Mathematics, Vol. 20, No. 2, pp. 40–53, 1992.

24. H. X. Phu, *γ-subdifferential and γ-convexity of functions on the real line*, Applied Mathematics and Optimization, Vol. 27, No. 2, pp. 145–160, 1993.

25. H. X. Phu, *Representation of bounded convex sets by rational convex hull of its γ-extreme points*, Numerical Functional Analysis and Optimization, Vol. 15, No. 7&8, pp. 915–920, 1994.

26. H. X. Phu, *γ-subdifferential and γ-convexity of functions on a normed space*, Journal of Optimization Theory and Applications, Vol. 85, No. 3, pp. 649–676, 1995.

27. H. X. Phu and N. Dinh, *Some remarks on the method of orienting curves*, Numerical Functional Analysis and Optimization, Vol. 16, No. 5&6, pp. 755–763, 1995.

28. H. X. Phu, *Some properties of globally δ-convex functions*, Optimization, Vol. 35, No. 1, pp. 23–41, 1995.

29. H. X. Phu, H. G. Bock, and J. P. Schlöder, *Extremal solutions of some constrained control problems*, Optimization, Vol. 35, No. 4, pp. 345–355, 1995.

30. H. X. Phu and N. N. Hai, *Some analytical properties of γ-convex functions on the real line*, Journal of Optimization Theory and Applications, Vol. 91, No. 3, pp. 671–694, 1996.

31. H. X. Phu and A. Hoffmann, *Essential supremum and supremum of summable functions*, Numerical Functional Analysis and Optimization, Vol. 17, No. 1&2, pp. 167–180, 1996.

32. H. X. Phu and P. T. An, *Stable generalization of convex functions*, Optimization, Vol. 38, No. 4, pp. 309–318, 1996.

33. J. Hichert, A. Hoffmann, and H. X. Phu, *Convergence speed of an integral method for computing the essential supremum*, in *Developments in Global Optimization*, Editors: I. M. Bomze, T. Csendes, R. Horst, and P. M. Pardalos, pp. 153–170, Kluwer Academic Publishers 1997.

34. H. X. Phu, *Six kinds of roughly convex functions*, Journal of Optimization Theory and Applications, Vol. 92, No. 2, pp. 357–375, 1997.

35. H. X. Phu, H. G. Bock, and J. Schlöder, *The method of orienting curves and its application to manipulator trajectory planning*, Numerical Functional Analysis and Optimization, Vol. 18, No. 1&2, pp. 213–225, 1997.

36. H. X. Phu, *Roughly convex functions*, in Proceeding of the Korea–Vietnam Joint Seminar "Mathematical Optimization Theory and Applications", Editors: Do Sang Kim and Pham Huu Sach, Pusan 1998, pp. 73–85.

37. N. N. Hai and H. X. Phu, *Symmetrically γ-convex functions*, Optimization, Vol. 46, No. 1, pp. 1–23, 1999.

38. H. X. Phu and P. T. An, *Stability of generalized convex functions with respect to linear disturbances*, Optimization, Vol. 46, No. 4, pp. 381–389, 1999.

39. H. X. Phu and P. T. An, *Outer γ-convexity in normed linear spaces*, Vietnam Journal of Mathematics, Vol. 27, No. 4, pp. 323–334, 1999.

40. H. X. Phu, H. G. Bock, and S. Pickenhain, *Rough stability of solutions to nonconvex optimization problems*, in *Optimization, Dynamics, and Economic Analysis*, Editors: E. J. Dockner, R. F. Hartl, M. Luptačik, and G. Sorger, pp. 22–35, Physica-Verlag (A Springer-Verlag Company), Heidelberg New York, 2000.

41. H. X. Phu and T. V. Truong, *Invariant property of roughly contractive mappings*, Vietnam Journal of Mathematics, Vol. 28, No. 3, pp. 275–290, 2000.

42. J. Hichert, A. Hoffmann, H. X. Phu, and R. Reinhardt, *A primal-dual integral method in global optimization*, Discussiones Mathematicae - Differential Inclusions, Control and Optimization, Vol. 20, No. 2, pp. 257–278, 2000.

43. H. X. Phu and N. D. Yen, *On the stability of solutions to quadratic programming problems*, Mathematical Programming, Ser. A, Vol. 89, No. 3, pp. 385–394, 2001.

44. H. X. Phu, *Rough convergence in normed linear spaces*, Numerical Functional Analysis and Optimization, Vol. 22, No. 1&2, pp. 201–224, 2001.

45. N. N. Hai and H. X. Phu, *Boundedness of symmetrically γ-convex functions*, Acta Mathematica Vietnamica, Vol. 26, No. 3, pp. 269–277, 2001.

46. H. X. Phu and T. D. Long, *Orienting method for obstacle problems*, Zeitschrift für Analysis und ihre Anwendungen, Vol. 21, No. 1, pp. 233–248, 2002.

47. H. X. Phu, *Rough continuity of linear operators*, Numerical Functional Analysis and Optimization, Vol. 23, No. 1&2, pp. 139–146, 2002.

48. H. X. Phu, *On circumradii of sets and roughly contractive mappings*, Vietnam Journal of Mathematics, Vol. 31, No. 1, pp. 115–122, 2003.

49. H. X. Phu, *Rough convergence in infinite-dimensional normed spaces*, Numerical Functional Analysis and Optimization, Vol. 24, No. 3&4, pp. 285–301, 2003.

50. H. X. Phu, *Some geometrical properties of outer γ-convex sets*, Numerical Functional Analysis and Optimization, Vol. 24, No. 3&4, pp. 303–309, 2003.

51. H. X. Phu, *Strictly and roughly convexlike functions*, Journal of Optimization Theory and Applications, Vol. 117, No. 1, pp. 139–156, 2003.

52. H. X. Phu, N. N. Hai, and P. T. An, *Piecewise constant roughly convex functions*, Journal of Optimization Theory and Applications, Vol. 117, No. 2, pp. 415-438, 2003.

53. H. X. Phu, *Fixed-point properties of roughly contractive mappings*, Zeitschrift für Analysis und ihre Anwendungen, Vol. 22, No. 3, pp. 517–528, 2003.

54. H. X. Phu, *Approximate fixed-point theorems for discontinuous mappings*, Numerical Functional Analysis and Optimization, Vol. 25, No. 1&2, pp. 119–136, 2004.

55. H. X. Phu, *Is invexity weaker than convexity?* Vietnam Journal of Mathematics, Vol. 32, No. 1, pp. 87–94, 2004.

56. H. X. Phu, *On some badly-solved problems with invexity*, Acta Mathematica Vietnamica, Vol. 29, No. 1, pp. 89–106, 2004.

57. H. X. Phu, *On a necessary optimality condition with invexity*, Acta Mathematica Vietnamica, Vol. 29, No. 2, pp. 141–148, 2004.

58. H. X. Phu, *Some basic ideas of rough analysis*, in Proceedings of the Sixth Vietnamese Mathematical Conference, H. H. Khoai, D. T. Thi, D. L. Van (Eds.), pp. 3–31, Hanoi National University Publishing House, Hanoi, 2005.

59. H. X. Phu and N. N. Hai, *Some analytical properties of γ-convex functions in normed linear spaces*, Journal of Optimization Theory and Applications, Vol. 126, No. 3, pp. 685–700, 2005.

60. H. X. Phu, *On efficient sets in* $\mathbb{R}^2$, Vietnam Journal of Mathematics, Vol. 33, No. 4, pp. 463–468, 2005.

61. H. X. Phu, *Some Properties of Solution Sets to Nonconvex Quadratic Programming Problems*, Optimization, Vol. 56, No. 3, pp. 369–383, 2007.

62. H. X. Phu, *Outer γ-convexity and inner γ-convexity of disturbed functions*, Vietnam Journal of Mathematics, Vol. 35, No. 1, pp. 107–119, 2007.

63. H. X. Phu, *Outer Γ-convexity in vector spaces*, Numerical Functional Analysis and Optimization, Vol. 29, No. 7&8, pp. 835–854, 2008.

64. H. X. Phu, *Supremizers of inner γ-convex functions*, Mathematical Methods of Operations Research, Vol. 67, No. 2, pp. 207–222, 2008.

65. H. D. Minh, H. G. Bock, H. X. Phu, and J. P. Schlöder, *Fast numerical methods for simulation of chemically reacting flows in catalytic monoliths*, in *Modeling, Simulation and Optimization of Complex Processes*, Editors: H. G. Bock et al., pp. 371–380, Springer, Berlin–Heidelberg, 2008.

66. H. X. Phu, *Minimizing convex functions with bounded perturbations*, SIAM Journal on Optimization, Vol. 20, No. 5, pp. 2709–2729, 2010.

67. H. X. Phu and V. M. Pho, *Global infimum of strictly convex quadratic functions with bounded perturbations*, Mathematical Methods of Operations Research, Vol. 72, No. 2, pp. 327–345, 2010.

68. H. X. Phu, V. M. Pho, and P. T. An, *Maximizing strictly convex quadratic functions with bounded perturbations*, Journal of Optimization Theory and Applications, Vol. 149, No. 1, pp. 1–25, 2011.

69. H. X. Phu and V. M. Pho, *Some properties of boundedly perturbed strictly convex quadratic functions*, Optimization, Vol. 61, No. 1, pp. 67–88, 2012.

70. H. X. Phu and H. G. Bock, *A common regularization for three reservoir optimal control problems*, Journal of Optimization Theory and Applications, Vol. 157, No. 1, pp. 199–228, 2013.

71. H. X. Phu, *Inner γ-convex functions in normed linear spaces*, Vietnam Journal of Mathematics, Vol. 43, No. 2, pp. 487–500, 2015.

72. D. T. Oanh, O. Davydov, and H. X. Phu, *Adaptive RBF-FD method for elliptic problems with point singularities in 2D*, Applied Mathematics and Computation, Vol. 313, pp. 474–497, 2017.

73. P. T. An and H. X. Phu, *Finding globally shortest paths through a sequence of adjacent triangles by the method of orienting curves*, Journal of Global Optimization, Vol. 85, No. 4, pp. 1037–1063, 2023.

74. N.-D. Hoang, N. K. Linh, and H. X. Phu, *Octagonal and hexadecagonal cut algorithms for finding the convex hull of finite sets with linear time complexity*, Applied Mathematics and Computation, Vol. 481, Paper No. 128931, 19 pp., 2024.

75. N.-D. Hoang, N. K. Linh, and H. X. Phu, *Inner δ-approximation of the convex hull of finite sets*, Computational Optimization and Applications, Vol. 91, No. 3, pp. 1373–1413, 2025.

Some Other Journal Articles

1. J. Jost and H. X. Phu, *In memory of Eberhard Zeidler*, Vietnam Journal of Mathematics, Vol. 47, No. 1, pp. 1–3, 2019.

2. H. V. Ngai, H. X. Phu, R. T. Rockafellar, and M. Théra, *Alexander Davidovich Ioffe: a life of contributions*, Vietnam Journal of Mathematics, Vol. 47, No. 3, pp. 511–516, 2019.

3. M. J. Cánovas, A. Kruger, H. X. Phu, and M. Théra, *Marco A. López, a pioneer of continuous optimization in Spain*, Vietnam Journal of Mathematics, Vol. 48, No. 2, pp. 211–219, 2020.

4. P. Benner, D. Kressner, and H. X. Phu, *Numerical mathematics and control - Preface to a special issue dedicated to Volker Mehrmann on the occasion of his 65^{th} birthday*, Vietnam Journal of Mathematics, Vol. 48, No. 4, pp. 615–620, 2020.

5. J.-M. Coron, S. Micu, and H. X. Phu, *Partial differential equations, control, and numerics - Preface to a special issue dedicated to Enrique Zuazua on the occasion of his 60^{th} birthday*, Vietnam Journal of Mathematics, Vol. 49, No. 3, pp. 615–618, 2021.

6. A. Dickenstein, L. T. Hoa, G. Ottaviani, and H. X. Phu, *Nonlinear algebra - Preface to two special issues dedicated to Bernd Sturmfels on the occasion of his 60^{th} birthday*, Vietnam Journal of Mathematics, Vol. 50, No. 2, pp. 319–321, 2022.

7. L. Formaggia, P. Gervasio, Y. Maday, and H. X. Phu, *Mathematical modelling and scientific computing: an effective way to understand reality - Preface to two special issues dedicated to Alfio Quarteroni on the occasion of his 70^{th} birthday*, Vietnam Journal of Mathematics, Vol. 50, No. 4, pp. 829–832, 2022.

8. R. Guralnick, G. Navarro, H. X. Phu, and E. Zelmanov, *Group theory and representation theory - Preface to two special issues dedicated to Pham Huu Tiep on the occasion of his 60^{th} birthday*, Vietnam Journal of Mathematics, Vol. 51, No. 3, pp. 567–569, 2023.

9. H. Holden, H. X. Phu, G. Ponce, and L. Vega, *A master in harmony and differential equations: a tribute to Carlos E. Kenig on his 70^{th} birthday* , Vietnam Journal of Mathematics, Vol. 51, No. 4, pp. 755–757, 2023.

10. T. Illés, B. Mordukhovich, H. X. Phu, Ch. Tammer, and L. F. Zuluaga, *Multiple faces of optimization—a tribute to Tamás Terlaky on his 70^{th} birthday*, Vietnam Journal of Mathematics, Vol. 53, No. 3, pp. 485–493, 2025.

Edited Books

1. H. G. Bock, E. Kostina, H. X. Phu, and R. Rannacher (Eds), *Modeling, Simulation and Optimization of Complex Processes*, Proceedings of the 2nd International Conference on High Performance Scientific Computing, March 10–14, 2003, Hanoi, Vietnam. Springer, Berlin Heidelberg, 2005.

2. H. G. Bock, E. Kostina, H. X. Phu, and R. Rannacher (Eds), *Modeling, Simulation and Optimization of Complex Processes*, Proceedings of the 3rd International Conference on High Performance Scientific Computing, March 6–10, 2006, Hanoi, Vietnam. Springer, Berlin Heidelberg, 2008.

3. H. G. Bock, H. X. Phu, R. Rannacher, and J. P. Schlöder (Eds), *Modeling, Simulation and Optimization of Complex Processes*, Proceedings of the 4th International Conference on High Performance Scientific Computing, March 2–6, 2009, Hanoi, Vietnam. Springer, Berlin Heidelberg, 2012.

4. H. G. Bock, H. X. Phu, R. Rannacher, and J. P. Schlöder (Eds), *Modeling, Simulation and Optimization of Complex Processes HPSC 2012*, Proceedings of the 5th International Conference on High Performance Scientific Computing, March 5–9, 2012, Hanoi, Vietnam. Springer, Berlin Heidelberg, 2014.

5. H. G. Bock, H. X. Phu, R. Rannacher, and J. P. Schlöder (Eds), *Modeling, Simulation and Optimization of Complex Processes HPSC 2015*, Proceedings of the 5th International Conference on High Performance Scientific Computing, March 16–20, 2015, Hanoi, Vietnam. Springer, 2017.

6. H. G. Bock, W. Jäger, E. Kostina, and H. X. Phu (Eds), *Modeling, Simulation and Optimization of Complex Processes HPSC 2018*, Proceedings of the Fifth International Conference on High Performance Scientific Computing, March 19–23, 2018, Hanoi, Vietnam. Springer Nature, 2021.

Theses

1. H. X. Phu, *Optimale Bilanzierung der Produktion am Fließband*, Diplomarbeit, Universität Leipzig, 1979.

2. H. X. Phu, *Methoden zur Lösung von Aufgaben der optimalen Steuerung mit engen Zustandsbereichen*, Dissertation, Universität Leipzig, 1983.

3. H. X. Phu, *Methode der Bereichsanalyse und Methode der Orientierungskurven zur Lösung von Aufgaben optimaler Steuerung mit Zustandsbeschränkungen*, Habilitationsschrift, Universität Leipzig, 1987.