

CURRICULUM VITAE

MILAN HLADÍK



CONTACT

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EDUCATION AND ACADEMIC DEGREES

- 2015 Doc. at Charles University, habilitation thesis: Interval linear algebra
- 2003 – 2006 PhD study at Charles University, Faculty of Mathematics and Physics,
branch of study: Econometrics and operations research,
PhD thesis: Explicit description of supporting and separating hyperplanes
of convex polyhedral sets depending on parameters,
(supervisor: Libuše Grygarová).
- 1997 – 2003 Master study at Charles University, Faculty of Mathematics and Physics,
study program: Computer science,
specialization: Discrete mathematics and optimization,
thesis: Postoptimal analysis for transportation problem.

TEACHING EXPERIENCES

at Faculty of Mathematics and Physics, Charles University (2003–?):

- basic course in Linear algebra I, II and III, advanced lectures in Integer programming, Multicriteria optimization, Fundamentals of nonlinear optimization, Nonlinear optimization algorithms, Discrete and continuous optimization.
- introducing and teaching Interval methods
- introducing and leading Optimization seminar

- teaching assistant of Discrete mathematics, Graph theory and combinatorics I, Algorithms and data structures II (besides the aforementioned).

WORKING EXPERIENCES

- 2015 – ? Associate professor at Charles University, Faculty of Mathematics and Physics, Department of Applied Mathematics
- 2012 – ? External researcher at University of Economics, Faculty of Informatics and Statistics, Department of Econometrics
- 2009 – 2015 Assistant professor at Charles University, Faculty of Mathematics and Physics, Department of Applied Mathematics
- 2008 (17 December 2007 – 31 August 2008) Postdoc position in COPRIN team at INRIA, Sophia Antipolis, France. Research subject: Interval linear algebra.
- 2006 – 2009 Junior researcher at Charles University, Faculty of Mathematics and Physics, Department of Applied Mathematics

ACADEMIC EXPERIENCES

- 2019 – ? vicehead of the Department of Applied Mathematics
- 2015 – ? head of Optimization Division at the Department of Applied Mathematics
- 2012 – 2015 scientific secretary at the Department of Applied Mathematics

MISCELLANEA

- 2016 the author of a new logo of the Department of Applied Mathematics

GUESTS

- 2019 *Moslem Zamani*, University of Tehran, Iran
topic: Error bounds for the absolute value equations
- 2015 *Marzieh Dehghani-Madiseh*, Amirkabir Univ. of Technology, Tehran, Iran
topic: New methods in interval matrix computations
- 2015 *Snehashish Chakraverty*, National Institute of Technology Rourkela, India
topic: Interval linear equations
- 2012 *Sanaz Rivaz*, Shahid Bahonar University of Kerman, Kerman, Iran,
topic: Multiobjective linear programming with interval coefficients

POSTDOCS

- 2019 – ? *Hossein Moosaei*, University of Bojnord, Iran
topic: Interval methods for global optimization

VISITS

- 2019 University of Salerno, Italy, December 10–15, hosted by *Raffaele Cerulli*
- 2018 project Auctus, INRIA Bordeaux – Sud-Ouest, France, August 20–26, hosted by *David Daney*
- 2018 University of Salerno, Italy, June 12–17, hosted by *Raffaele Cerulli*
- 2018 University of Salerno, Italy, February 11–16, hosted by *Raffaele Cerulli*
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STUDENTS

- Bachelor’s students: 13 defended
- Master’s students: 5 defended
- PhD students: 1 defended

– *Jaroslav Horáček* (2019), Interval linear and nonlinear systems, Young scientists award from MatTriad’13 and invited speaker to MatTriad’15,

PhD students: 3 currently under supervision

- *Elif Garajová* (since 2016), Interval linear programming
 - *Matej Moravčík* (since 2014), Algorithms for extensive form games with imperfect information
 - *Martin Schmid* (since 2013), Algorithmic game theory
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RESEARCH AREA AND AREA OF INTEREST

Interval analysis:

- Interval-valued linear systems and interval matrices; Numerical analysis and matrix theory; Interval-valued regression problems and statistics

Optimization and operations research:

- Global optimization; Linear programming; Multiobjective optimization; Parametric programming and sensitivity analysis; Game theory
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COLLABORATION

- *Theoretical properties and interval methods for parametric linear systems* (2015-2017), bilateral agreement, E.D. Popova (Bulgarian Academy of Sciences) and M. Hladík (Charles University in Prague)
- *Data analytics for the optimization of industrial processes and flows under uncertainty* (2018), program for PhD students in Physics, Mathematics and Applications – Curriculum Mathematics, at University of Salerno

MEMBERSHIP

- iSoGO – International Society of Global Optimization (since 2018)
- ČSOV – Czech Society for Operations Research (since 2017)
- ILAS – International Linear Algebra Society (since 2016)
- SIAM – Society for Industrial and Applied Mathematics (since 2015)
- JČMF – Union of Czech Mathematicians and Physicists (since 2010)
- EUROPT – The Continuous Optimization Working Group of EURO (since 2008)

INVITED PLENARY TALKS AT CONFERENCES AND WORKSHOPS

- *The role of interval linear algebra in global optimization*, 1st International Workshop on Trusted Numerical Computations, TNC 2018, June 19–20, Krakow, Poland. Minisymposium at International Conference on Emerging Trends in Applied Mathematics and Mechanics, ETAMM 2018.
- *Interval robustness in linear programming* (in czech), 20th winter school of JČMF, ROBUST 2018, January 21–26, Rybník, Czech Republic.
- *Introduction to interval computation and numerical verification*, invited two lectures, Seminar of numerical analysis and winter school, SNA 2017, January 30 – February 3, 2017, Ostrava, Czech Republic.
- *Interval Programming* (with M. Černý, invited series of 8 lectures), workshop for the 7th International Conference of Iranian Operations Research Society, OR2014, May 12–13, Semnan, Iran.
- *Optimization with uncertain, inexact or unstable data: Linear programming and the interval approach* (with M. Černý, invited lecture), 10th International Conference on Strategic Management and its Support by Information Systems, SMSIS 2013, August 29–30, Valašské Meziříčí, Czech Republic.
- *New directions in interval linear programming*, 15th GAMM-IMACS International Symposium on Scientific Computing, Computer Arithmetic and Verified Numerical Computations, SCAN 2012, September 23–29, Novosibirsk, Russia.
- *Algorithms, complexity and interval data* (with M. Černý, in czech), 17th summer school of JČMF, ROBUST 2012, September 9–14, Němčičky, Czech Republic.

EDITORIAL BOARD

- Journal of Mathematical Modeling (since 2020)
- Mathematical Innovations (since 2019)
- European Journal of Operational Research (since 2018)

- Reliable Computing (since 2016)
- International Journal of Fuzzy Computation and Modelling (since 2013, Associate Editor since 2018)

Guest editor:

- Special issue of Applications of Mathematics from the International Conference on Matrix Analysis and its Applications, MAT-TRIAD 2019 (with M. Rozložník).
- Special issue of Reliable Computing from 8th Small Workshop on Interval Methods, SWIM 2015 (with L. Jaulin and N. Ramdani).

PROGRAM COMMITTEE MEMBERSHIP

- 6th World Congress on Global Optimization, *WCGO 2019*, Metz, France, July 8–10, 2019
- 14th Global Optimization Workshop, *LeGO 2018*, Leiden, The Netherlands, September 18–21, 2018
- 1st International Workshop on Trusted Numerical Computations, *TNC 2018*, Krakow, Poland, June 19–20, 2018
- The 7th International Conference of Iranian Operation Research Society, *ORO 2014*, Semnan, Iran, May 14–15, 2014

CONFERENCE ORGANIZATION

Main organizer:

- International Conference on Matrix Analysis and its Applications, MAT-TRIAD 2019, September 8-13, 2019, Liblice, Czech Republic. (jointly with M. Rozložník)
<http://mattriad.math.cas.cz/>
- 8th Small Workshop on Interval Methods, SWIM 2015, June 9-11, 2015, Prague, Czech Republic. <https://kam.mff.cuni.cz/conferences/swim2015/>

Special sessions:

- Session on *Interval Matrices* at MAT-TRIAD 2019 - International Conference on MATRIX Analysis and its Applications, September 8-13, 2019, Liblice, Czech Republic.
- Session on *Interval Matrices* at MAT-TRIAD 2017 - International Conference on MATRIX Analysis and its Applications, September 25-29, 2017, Będlewo, Poland.

GRANT PROJECTS

Principal investigator:

- *Novel approaches for relaxation and approximation techniques in deterministic global optimization*, 2018–2020, grant P403-18-04735S of the Grant Agency of the Czech Republic.

- *Interval methods for optimization problems*, 2013–2017, grant P402-13-10660S of the Grant Agency of the Czech Republic.

Team member:

- *Streaming financial data and related identification and optimization problems*, 2019–2021, grant GA19-02773S of the Grant Agency of the Czech Republic, principal investigator M. Černý.
- *Decision making in uncertain environment: Stability analysis and robustification of optimization models*, 2016–2018, grant P403-16-00408S of the Grant Agency of the Czech Republic, principal investigator M. Černý.
- *Center of excellence – Institute for Theoretical Computer Science*, 2012–2018, research center supported by the project P202/12/G061 of GA CR, principal investigator J. Nešetřil.
- *Models of optimal economic decision making under instability, uncertainty and indeterminacy*, 2012–2015, grant P403/12/1947 of the Grant Agency of the Czech Republic, principal investigator M. Černý.
- *Center for Foundations of Modern Computer Science*, 2018–2023, Charles University research center in the program UNCE, UNCE/SCI/004, principal investigator J. Sgall.
- *Center of Modern Computer Science*, 2012–2017, Charles University research center in the program UNCE, principal investigator J. Sgall.

REFEREE

- Peer review activity: see <https://publons.com/author/1198622/>
- Editors' Award for Excellence in Reviewing, by European Journal of Operational Research, 2018

BOOKS AND BOOK CHAPTERS

- [1] M. Hladík. *Lineární algebra (nejen) pro informatiky*. MatfyzPress, Praha, 1st edition, 2019. In Czech.
- [2] M. Hladík. Interval linear programming: A survey. In Z. A. Mann, ed., *Linear Programming – New Frontiers in Theory and Applications*, chapter 2, pages 85–120. Nova Science Publishers, New York, 2012.

PAPERS IN JOURNALS

- [1] A. Batamiz, M. Allahdadi, and M. Hladík. Obtaining efficient solutions of interval multi-objective linear programming problems. *Int. J. Fuzzy Syst.*, 22(3):873–890, 2020.
- [2] M. Hladík, M. Černý, and J. Antoch. EIV regression with bounded errors in data: total 'least squares' with Chebyshev norm. *Stat. Papers*, 61(1):279–301, 2020.

- [3] A. Mostafae and M. Hladík. Optimal value bounds in interval fractional linear programming and revenue efficiency measuring. *Cent. Eur. J. Oper. Res.*, 28(3):963–981, 2020.
- [4] J. Novotná, M. Hladík, and T. Masařík. Duality gap in interval linear programming. *J. Optim. Theory Appl.*, 184(2):565–580, 2020.
- [5] M. Dehghani-Madiseh and M. Hladík. Enclosing the solution set of the parametric generalised sylvester matrix equation $A(p)XB(p) + C(p)XD(p) = F(p)$. *Int. J. Syst. Sci.*, 50(11):2153–2167, 2019.
- [6] E. Garajová and M. Hladík. On the optimal solution set in interval linear programming. *Comput. Optim. Appl.*, 72(1):269–292, 2019.
- [7] E. Garajová and M. Hladík. Checking weak optimality and strong boundedness in interval linear programming. *Soft Comput.*, 23(9):2937–2945, 2019.
- [8] E. Garajová, M. Hladík, and M. Rada. Interval linear programming under transformations: optimal solutions and optimal value range. *Cent. Eur. J. Oper. Res.*, 27(3):601–614, Sep 2019.
- [9] E. Garajová, M. Hladík, and M. Rada. The best, the worst and the semi-strong: optimal values in interval linear programming. *Croat. Oper. Res. Rev.*, 10(2):201–209, 2019.
- [10] M. Hladík. Universal efficiency scores in data envelopment analysis based on a robust approach. *Expert Syst. Appl.*, 122:242–252, May 2019.
- [11] M. Hladík. Tolerances, robustness and parametrization of matrix properties related to optimization problems. *Optim.*, 68(2-3):667–690, 2019.
- [12] M. Hladík. Support set invariancy for interval bimatrix games. *Int. J. Uncertainty Fuzziness Knowl.-Based Syst.*, 27(02):225–237, 2019.
- [13] M. Hladík, M. Rada, S. Sitarz, and E. Garajová. Range sets for weak efficiency in multi-objective linear programming and a parametric polytopes intersection problem. *Optim.*, 68(2-3):645–666, 2019.
- [14] M. Hladík and I. Skalna. Relations between various methods for solving linear interval and parametric equations. *Linear Algebra Appl.*, 574:1–21, August 2019.
- [15] M. Rada, M. Hladík, and E. Garajová. Testing weak optimality of a given solution in interval linear programming revisited: NP-hardness proof, algorithm and some polynomially-solvable cases. *Optim. Lett.*, 13(4):875–890, June 2019.
- [16] I. Skalna and M. Hladík. Direct and iterative methods for interval parametric algebraic systems producing parametric solutions. *Numer. Linear Algebra Appl.*, 26(3):e2229:1–e2229:24, 2019.
- [17] M. Černý and M. Hladík. Possibilistic linear regression with fuzzy data: Tolerance approach with prior information. *Fuzzy Sets Syst.*, 340:127–144, 2018.
- [18] M. Dehghani-Madiseh and M. Hladík. Efficient approaches for enclosing the united solution set of the interval generalized Sylvester matrix equations. *Appl. Numer. Math.*, 126:18–33, 2018.
- [19] D. Hartman and M. Hladík. Regularity radius: Properties, approximation and a not a priori exponential algorithm. *Electron. J. Linear Algebra*, 33:122–136, 2018.
- [20] M. Hladík. Bounds for the solutions of absolute value equations. *Comput. Optim. Appl.*, 69(1):243–266, 2018.
- [21] M. Hladík. Testing pseudoconvexity via interval computation. *J. Glob. Optim.*, 71(3):443–455, 2018.
- [22] M. Hladík. The worst case finite optimal value in interval linear programming. *Croat.*

- Oper. Res. Rev.*, 9(2):245–254, 2018.
- [23] M. Hladík. AE regularity of interval matrices. *Electron. J. Linear Algebra*, 33:137–146, 2018.
- [24] J. Horáček, M. Hladík, and J. Matějka. Determinants of interval matrices. *Electron. J. Linear Algebra*, 33:99–112, 2018.
- [25] J. Horáček, V. Koucký, and M. Hladík. Novel approach to computerized breath detection in lung function diagnostics. *Comput. Biol. Med.*, 101:1–6, 2018.
- [26] S. Chakraverty, M. Hladík, and N. R. Mahato. A sign function approach to solve algebraically interval system of linear equations for nonnegative solutions. *Fund. Inform.*, 152(1):13–31, 2017.
- [27] S. Chakraverty, M. Hladík, and D. Behera. Formal solution of an interval system of linear equations with an application in static responses of structures with interval forces. *Appl. Math. Model.*, 50:105–117, 2017.
- [28] M. Hladík. Transformations of interval linear systems of equations and inequalities. *Linear Multilinear Algebra*, 65(2):211–223, 2017.
- [29] M. Hladík. Interval convex quadratic programming problems in a general form. *Cent. Eur. J. Oper. Res.*, 25(3):725–737, 2017.
- [30] M. Hladík. On strong optimality of interval linear programming. *Optim. Lett.*, 11(7):1459–1468, 2017.
- [31] M. Hladík and M. Černý. Two optimization problems in linear regression with interval data. *Optim.*, 66(3):331–349, 2017.
- [32] J. A. dit Sandretto and M. Hladík. Solving over-constrained systems of non-linear interval equations - And its robotic application. *Appl. Math. Comput.*, 313:180–195, 2017.
- [33] I. Skalna and M. Hladík. A new algorithm for Chebyshev minimum-error multiplication of reduced affine forms. *Numer. Algorithms*, 76(4):1131–1152, 2017.
- [34] I. Skalna and M. Hladík. A new method for computing a p-solution to parametric interval linear systems with affine-linear and nonlinear dependencies. *BIT Numer. Math.*, 57(4):1109–1136, 2017.
- [35] M. Černý and M. Hladík. Inverse optimization: towards the optimal parameter set of inverse LP with interval coefficients. *Cent. Eur. J. Oper. Res.*, 24(3):747–762, 2016.
- [36] M. Hladík. An extension of the α BB-type underestimation to linear parametric Hessian matrices. *J. Glob. Optim.*, 64(2):217–231, 2016.
- [37] M. Hladík. Robust optimal solutions in interval linear programming with forall-exists quantifiers. *Eur. J. Oper. Res.*, 254(3):705–714, 2016.
- [38] M. Hladík and M. Černý. First step immersion in interval linear programming with linear dependencies. *Bull. Iranian Math. Soc.*, 42(7):43–53, 2016.
- [39] M. Hladík and J. Rohn. Radii of solvability and unsolvability of linear systems. *Linear Algebra Appl.*, 503:120–134, 2016.
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- [41] S. Rivaz, M. A. Yaghoobi, and M. Hladík. Using modified maximum regret for finding a necessarily efficient solution in an interval MOLP problem. *Fuzzy Optim. Decis. Mak.*, 15(3):237–253, 2016.
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- [44] M. Hladík. Complexity issues for the symmetric interval eigenvalue problem. *Open Math.*, 13(1):157–164, 2015.
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- [46] M. Hladík and M. Černý. Total least squares and Chebyshev norm. *Procedia Comput. Sci.*, 51(0):1791–1800, 2015.
- [47] M. Hladík and E. D. Popova. Maximal inner boxes in parametric AE-solution sets with linear shape. *Appl. Math. Comput.*, 270:606–619, 2015.
- [48] M. Černý and M. Hladík. The complexity of computation and approximation of the t-ratio over one-dimensional interval data. *Comput. Stat. Data Anal.*, 80(0):26–43, 2014.
- [49] M. Hladík. How to determine basis stability in interval linear programming. *Optim. Lett.*, 8(1):375–389, 2014.
- [50] M. Hladík. New operator and method for solving real preconditioned interval linear equations. *SIAM J. Numer. Anal.*, 52(1):194–206, 2014.
- [51] M. Hladík. Strong solvability of linear interval systems of inequalities with simple dependencies. *Int. J. Fuzzy Comput. Model.*, 1(1):3–14, 2014.
- [52] M. Hladík. On approximation of the best case optimal value in interval linear programming. *Optim. Lett.*, 8(7):1985–1997, 2014.
- [53] M. Hladík and M. Černý. Tolerance approach to possibilistic nonlinear regression with interval data. *IEEE Trans. Cybern.*, 44(12):2509–2520, 2014.
- [54] M. Hladík and S. Ratschan. Efficient solution of a class of quantified constraints with quantifier prefix exists-forall. *Math. Comput. Sci.*, 8(3-4):329–340, 2014.
- [55] M. Černý, J. Antoch, and M. Hladík. On the possibilistic approach to linear regression models involving uncertain, indeterminate or interval data. *Inf. Sci.*, 244:26–47, 2013.
- [56] M. Hladík. Bounds on eigenvalues of real and complex interval matrices. *Appl. Math. Comput.*, 219(10):5584–5591, 2013.
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- [58] M. Hladík and S. Sitarz. Maximal and supremal tolerances in multiobjective linear programming. *Eur. J. Oper. Res.*, 228(1):93–101, 2013.
- [59] E. D. Popova and M. Hladík. Outer enclosures to the parametric AE solution set. *Soft Comput.*, 17(8):1403–1414, 2013.
- [60] J. Horáček and M. Hladík. Computing enclosures of overdetermined interval linear systems. *Reliab. Comput.*, 19(2):142–155, 2013.
- [61] M. Černý and M. Hladík. Two complexity results on c-optimality in experimental design. *Comput. Optim. Appl.*, 51(3):1397–1408, 2012.
- [62] M. Hladík. Complexity of necessary efficiency in interval linear programming and multiobjective linear programming. *Optim. Lett.*, 6(5):893–899, 2012.
- [63] M. Hladík. Enclosures for the solution set of parametric interval linear systems. *Int. J. Appl. Math. Comput. Sci.*, 22(3):561–574, 2012.
- [64] M. Hladík and M. Černý. Interval regression by tolerance analysis approach. *Fuzzy Sets Syst.*, 193:85–107, 2012.
- [65] M. Hladík, D. Daney, and E. P. Tsigaridas. An algorithm for addressing the real interval eigenvalue problem. *J. Comput. Appl. Math.*, 235(8):2715–2730, 2011.

- [66] M. Hladík, D. Daney, and E. P. Tsigaridas. A filtering method for the interval eigenvalue problem. *Appl. Math. Comput.*, 217(12):5236–5242, 2011.
- [67] M. Hladík, D. Daney, and E. P. Tsigaridas. Characterizing and approximating eigenvalue sets of symmetric interval matrices. *Comput. Math. Appl.*, 62(8):3152–3163, 2011.
- [68] M. Hladík and L. Jaulin. An eigenvalue symmetric matrix contractor. *Reliab. Comput.*, 16:27–37, 2011.
- [69] M. Hladík. Optimal value bounds in nonlinear programming with interval data. *TOP*, 19(1):93–106, 2011.
- [70] M. Hladík. Tolerance analysis in linear systems and linear programming. *Optim. Methods Softw.*, 26(3):381–396, 2011.
- [71] M. Hladík, D. Daney, and E. Tsigaridas. Bounds on real eigenvalues and singular values of interval matrices. *SIAM J. Matrix Anal. Appl.*, 31(4):2116–2129, 2010.
- [72] M. Hladík. On the separation of parametric convex polyhedral sets with application in MOLP. *Appl. Math.*, 55(4):269–289, 2010.
- [73] M. Hladík. Interval valued bimatrix games. *Kybernetika*, 46(3):435–446, 2010.
- [74] M. Hladík. Solution sets of complex linear interval systems of equations. *Reliab. Comput.*, 14:78–87, 2010.
- [75] M. Hladík. Generalized linear fractional programming under interval uncertainty. *Eur. J. Oper. Res.*, 205(1):42–46, 2010.
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- [81] M. Hladík. Additive and multiplicative tolerance in multiobjective linear programming. *Oper. Res. Lett.*, 36(3):393–396, 2008.
- [82] M. Hladík. Solution set characterization of linear interval systems with a specific dependence structure. *Reliab. Comput.*, 13(4):361–374, 2007.

PAPERS IN PROCEEDINGS

- [1] M. Hladík, M. Černý, and V. Kreinovich. When is data processing under interval and fuzzy uncertainty feasible: What if few inputs interact? Does feasibility depend on how we describe interaction? In S. Shahbazova et al., ed., *Recent Developments and the New Direction in Soft-Computing Foundations and Applications*, volume 393 of *STUDFUZZ*, pages 91–100. Springer, Cham, 2021.
- [2] M. Hladík, M. Černý, and V. Kreinovich. Optimization of quadratic forms and t-norm forms on interval domain and computational complexity. In S. Shahbazova et al., ed., *Recent Developments and the New Direction in Soft-Computing Foundations and Applications*, volume 393 of *STUDFUZZ*, pages 101–108. Springer, Cham, 2021.

- [3] M. Hladík. An overview of polynomially computable characteristics of special interval matrices. In O. Kosheleva et al., ed., *Beyond Traditional Probabilistic Data Processing Techniques: Interval, Fuzzy etc. Methods and Their Applications*, volume 835 of *Studies in Computational Intelligence*, pages 295–310. Springer, Cham, 2020.
- [4] M. Hladík. P-completeness of testing solutions of parametric interval linear systems. In M. Ceberio and V. Kreinovich, eds., *Decision Making under Constraints*, volume 276 of *Studies in Systems, Decision and Control*, pages 117–123. Springer, Cham, 2020.
- [5] M. Hladík. Two approaches to inner estimations of the optimal solution set in interval linear programming. In *Proceedings of the 2020 4th International Conference on Intelligent Systems, Metaheuristics & Swarm Intelligence*, ISMSI 2020, pages 99–104, New York, USA, 2020. Association for Computing Machinery.
- [6] M. Hladík and D. Hartman. Maximization of a convex quadratic form on a polytope: Factorization and the Chebyshev norm bounds. In H. A. Le Thi et al., ed., *Optimization of Complex Systems: Theory, Models, Algorithms and Applications*, volume 991 of *AISC*, pages 119–127, Cham, 2020. Springer.
- [7] H. Moosaei and M. Hladík. Least squares K-SVCR multi-class classification. In I. S. Kotsireas and P. M. Pardalos, eds., *Learning and Intelligent Optimization*, volume 12096 of *LNCS*, pages 117–127. Springer, Cham, 2020.
- [8] I. Skalna, M. Pietroń, and M. Hladík. Improvements of monotonicity approach to solve interval parametric linear systems. In R. Wyrzykowski et al., ed., *Parallel Processing and Applied Mathematics*, volume 12044 of *LNCS*, pages 374–383. Springer, Cham, 2020.
- [9] M. Hladík. Interval robustness of matrix properties for the linear complementarity problem. In L. Zadnik Stirn et al., ed., *Proceedings of the 15th International Symposium on Operational Research SOR'19, Bled, Slovenia, September 25-27, 2019*, pages 488–493, Ljubljana, Slovenia, 2019. BISTISK d.o.o.
- [10] M. Hladík, L. Kolev, and I. Skalna. Sufficient conditions for pseudoconvexity by using linear interval parametric techniques. In M. T. M. Emmerich et al., ed., *Proceedings LeGO 2018 - 14th International Global Optimization Workshop*, volume 2070 of *AIP Conference Proceedings*, pages 020001–1–020001–4, Melville, New York, 2019. American Institute of Physics (AIP).
- [11] M. Rada, E. Garajová, J. Horáček, and M. Hladík. A new pruning test for parametric interval linear systems. In L. Zadnik Stirn et al., ed., *Proceedings of the 15th International Symposium on Operational Research SOR'19, Bled, Slovenia, September 25-27, 2019*, pages 506–511, Ljubljana, Slovenia, 2019. BISTISK d.o.o.
- [12] M. Hladík. Positive semidefiniteness and positive definiteness of a linear parametric interval matrix. In M. Ceberio and V. Kreinovich, eds., *Constraint Programming and Decision Making: Theory and Applications*, volume 100 of *Studies in Systems, Decision and Control*, pages 77–88. Springer, Cham, 2018.
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