Report on the evaluation of the publications in 2021
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As in the previous 10 years, members of the Council of the project Cooperatio – Mathematics[1] (successor to PRVOUK P47 and Progres Q49) have evaluated the publications published in 2021 by the members of the School of Mathematics, and decided on the rewards for the authors of the best of them. The decision-making process is described in more detail on the next page.

Summary

The members of the Council had complete information on all publications kept in the OBD/RIV database with the year of publication 2021, for which at least one of the authors was a member of the School of Mathematics. There were the **245** publications, all having RIV status "accepted". In the most important category of original scientific articles, we have recorded **220** of which **190** were published in journals with IF. More detailed information on publications in the main categories, including the history since 2012, can is in the following table.

Publications of the members of the School of Mathematics since 2012

year	journal with IF	journal without IF	journal total	book / monograph	chapter in monograph	conference proceeding	total
2012	139	41	180	1	10	69	271
2013	157	34	191	6	7	53	257
2014	147	25	172	3	6	53	234
2015	166	27	193	5	6	48	252
2016	152	23	175	2	2	39	218
2017	156	27	183	1	5	27	232
2018	164	28	192	2	18	34	246
2019	154	37	191	7	16	35	249
2020	189	29	218	7	14	38	277
2021	**190**	**30**	**220**	**0**	**2**	**23**	**245**

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[1] https://www.mff.cuni.cz/en/math/research/cooperatio

A detailed description of the process of evaluation

Each member of the Council received a complete list of all publications including the link to the electronic version of publication. In the first evaluation round, each member of the Council proposed about 10 - 20 best publications in his area of expertise. It was possible to give the marks "a" or "b" in order to express the preference. Each publication, having at least one mark "a" or "b", was selected for the second round. Altogether, the list of 66 publications having at least one mark had arisen.

In the second round, each member of the Council received this list of publications ordered with the descending order of AIS journals in which they were published. Then he can select 5 - 10 publications with mark "A" and 10-20 publication with mark "B". The marks from the first round had only an informative character and were not counted in the second round.

Based on an email communication, Council proposed the following:

- each publication having at least 3 marks "A" belong to the category "Elite",

- each publication having at least 3 marks "B" or 1 mark "A" + 1 marks "B" belong to the category "Rewarded",

- each publication having at most 2 marks "B" or only 1 mark "A" belong to the category "Not–to-be-rewarded".

In the third evaluation round, each member of the Council could individually suggest change of status of any publication within the three categories mentioned. They had to give adequate reasons for their proposal. These proposals were then voted on again on the hybrid meeting on June 27, 2022. Then this report has been prepared and approved by the Coopeartio Council.

Members of the Cooperatio Council decided in advance (as in previous years) that they themselves cannot be rewarded for publications. However, co-authors of publications who are not members of the Cooperatio Council may be rewarded.

Selected publications

(**A**) List of **10 publications** in the **Elite** category, whose (co) authors are members of the School of Mathematics, and who affiliated their publication to MFF UK (the order of publications is random). Only the highlighted authors could be rewarded (i.e. they have an employment relationship with the MFF and at the same time are not members of the Cooperatio Council; alternatively they are students of the MFF).

- RINDLER, Filip - SCHWARZACHER, Sebastian - VELÁZQUEZ, Juan J.L.. Two-Speed Solutions to Non-convex Rate-Independent Systems. Archive for Rational Mechanics and Analysis. 2021, 239(1), 1667-1731. ISSN 0003-9527. link

- KALA, Vítězslav - YATSYNA, Pavlo. Lifting problem for universal quadratic forms. Advances in Mathematics. 2021, 2021(377), 107497. ISSN 0001-8708. link

- ALBERICO, Angela - CIANCHI, Andrea - PICK, Luboš - SLAVÍKOVÁ, Lenka. Fractional Orlicz-Sobolev embeddings. Journal des Mathematiques Pures et Appliquees. 2021, 149(1), 216-253. ISSN 0021-7824. link

- SHAUL, Liran. Koszul complexes over Cohen-Macaulay rings. Advances in Mathematics. 2021, 2021(386), 107806. ISSN 0001-8708. link

- BATHORY, Michal - BULÍČEK, Miroslav - MÁLEK, Josef. Large data existence theory for three-dimensional unsteady flows of rate-type viscoelastic fluids with stress diffusion. Advances in Nonlinear Analysis. 2021, 10(1), 501-521. ISSN 2191-9496. link

- BULÍČEK, Miroslav - MÁLEK, Josef - PRŮŠA, Vít - SULI, Endre. On incompressible heat-conducting viscoelastic rate-type fluids with stress-diffusion and purely spherical elastic response. SIAM Journal on Mathematical Analysis. 2021, 53(4), 3985-4030. ISSN 0036-1410. link

- CARSON, Erin Claire - LUND, Kathryn - ROZLOZNIK, Miroslav. The stability of block variants of classical Gram-Schmidt. SIAM Journal on Matrix Analysis and Applications. 2021, 42(3), 1365-1380. ISSN 0895-4798. link

- LU, Yong - POKORNÝ, Milan. Homogenization of stationary Navier-Stokes-Fourier system in domains with tiny holes. Journal of Differential Equations. 2021, 278(Neuveden), 463-492. ISSN 0022-0396. link

- ALBIAC, Fernando - ANSORENA, Jose L - CÚTH, Marek - DOUCHA, Michal. Lipschitz free spaces isomorphic to their infinite sums and geometric applications. Transactions of the American Mathematical Society. 2021, 374(10), 7281-7312. ISSN 0002-9947. link

- MACIAK, Matúš - OKHRIN, Ostap - PEŠTA, Michal. Infinitely stochastic micro reserving. Insurance: Mathematics and Economics. 2021, 100(September 2021), 30-58. ISSN 0167-6687. link

(**B**) List of **32 publications** in the **Rewarded** category, whose (co) authors are members of the School of Mathematics, and who affiliated their publication to MFF UK (the order of publications is random). Only the highlighted authors could be rewarded (i.e. they have an employment relationship with the MFF and at the same time are not members of the Cooperatio Council; alternatively they are students of the MFF).

- BULÍČEK, Miroslav - MARINGOVÁ, Erika - MÁLEK, Josef. On nonlinear problems of parabolic type with implicit constitutive equations involving flux. Mathematical Models and Methods in Applied Sciences. 2021, 31(10), 2039-2090. ISSN 0218-2025. link

- POSITSELSKI, Leonid - ŠŤOVÍČEK, Jan. The Tilting-Cotilting Correspondence. International Mathematics Research Notices. 2021, 2021(1), 191-276. ISSN 1073-7928. link

- JOHN, Volker - KNOBLOCH, Petr - KORSMEIER, Paul. On the solvability of the nonlinear problems in an algebraically stabilized finite element method for evolutionary transport-dominated equations. Mathematics of Computation. 2021, 90(328), 595-611. ISSN 0025-5718. link

- MINDRILA, Claudiu - SCHWARZACHER, Sebastian. Existence of steady very weak solutions to Navier-Stokes equations with non-Newtonian stress tensors. Journal of Differential Equations. 2021, 279(1), 10-45. ISSN 0022-0396. link

- CIANCHI, Andrea - MUSIL, Vit - PICK, Luboš. Sharp exponential inequalities for the Ornstein-Uhlenbeck operator. Journal of Functional Analysis. 2021, 281(11), 109217. ISSN 0022-1236. link

- TŮMA, Karel - REZAEE-HAJIDEHI, Mohsen - HRON, Jaroslav - FARRELL, P. E - STUPKIEWICZ, Stanislaw. Phase-field modeling of multivariant martensitic transformation at finite-strain: Computational aspects and large-scale finite-element simulations. Computer Methods in Applied Mechanics and Engineering. 2021, 377(April), 113705. ISSN 0045-7825. link

- POZZA, Stefano - SIMONCINI, Valeria. Functions of rational Krylov space matrices and their decay properties. Numerische Mathematik. 2021, 148(květen), 99-126. ISSN 0029-599X. link

- HOEFER, Richard M - KOWALCZYK, Karina - SCHWARZACHER, Sebastian. Darcy's law as low Mach and homogenization limit of a compressible fluid in perforated domains. Mathematical Models and Methods in Applied Sciences. 2021, 31(09), 1787-1819. ISSN 0218-2025. link

- RONDOŠ, Jakub - SPURNÝ, Jiří. The Dirichlet problem on compact convex sets. Journal of Functional Analysis. 2021, 281(12), 109251. ISSN 0022-1236. link

- KOPA, Miloš - RUSÝ, Tomáš. A decision-dependent randomness stochastic program for asset-liability management model with a pricing decision. Annals of Operations Research. 2021, 299(1), 241-271. ISSN 0254-5330. link

- NAGY, Stanislav - DVOŘÁK, Jiří. Illumination Depth. Journal of Computational and Graphical Statistics. 2021, 30(1), 78-90. ISSN 1061-8600. link

- ROUBÍČEK, Tomáš. Fine metrizable convex relaxations of parabolic optimal control problems. SIAM Journal on Control and Optimization. 2021, 59(2), 1293-1311. ISSN 0363-0129. link

- SLAVÍK, Antonín. Reaction-diffusion equations on graphs: stationary states and Lyapunov functions. Nonlinearity. 2021, 34(4), 1854-1879. ISSN 0951-7715. link

- SLÁVIK, Alexander - ŠŤOVÍČEK, Jan. On flat generators and Matlis duality for quasicoherent sheaves. Bulletin of the London Mathematical Society. 2021, 2021(53), 63-74. ISSN 0024-6093. link

- NAGY, Stanislav - HELANDER, Sami - VAN BEVER, Germain - VIITASAARI, Lauri - ILMONEN, Pauliina. Flexible integrated functional depths. Bernoulli. 2021, 27(1), 673-701. ISSN 1350-7265. link

- SILBER, Zdeněk. Weak* derived sets of convex sets in duals of non-reflexive spaces. Journal of Functional Analysis. 2021, 281(12), 109259. ISSN 0022-1236. link

- ČOUPEK, Petr - GARRIDO-ATIENZA, María J. Bilinear equations in hilbert space driven by paths of low regularity. Discrete and Continuous Dynamical Systems - Series B. 2021, 26(1), 121-154. ISSN 1531-3492. link

- ALLOLIO, Christoph - HARRIES, Daniel. Calcium Ions Promote Membrane Fusion by Forming Negative-Curvature Inducing Clusters on Specific Anionic Lipids. ACS Nano. 2021, 15(8), 12880-12887. ISSN 1936-0851. link

- CHIODAROLI, Elisabetta - KREML, Ondřej - MÁCHA, Václav - SCHWARZACHER, Sebastian. Non-uniqueness of admissible weak solutions to the compressible euler equations with smooth initial data. Transactions of the American Mathematical Society. 2021, 374(4), 2269-2295. ISSN 0002-9947. link

- HENDRYCH, Radek - CIPRA, Tomáš. Applying state space models to stochastic claims reserving. Astin Bulletin. 2021, 51(1), 267-301. ISSN 0515-0361. link

- SCOTT, Jennifer - TŮMA, Miroslav. Strengths and limitations of stretching for least-squares problems with some dense rows. ACM Transactions on Mathematical Software. 2021, 47(1), 1-25. ISSN 0098-3500. link

- NOVOTNY, Antonin - POKORNÝ, Milan. Continuity equation and vacuum regions in compressible flows. Journal of Evolution Equations. 2021, 21(3), 2891-2922. ISSN 1424-3199. link

- CARSON, Erin Claire - GERGELITS, Tomáš - YAMAZAKI, Ichitaro. Mixed precision s-step Lanczos and conjugate gradient algorithms. Numerical Linear Algebra with Applications. 2021, 2021(e2425), 1-24. ISSN 1070-5325. link

- GREAVES, G.R.W. - SYATRIADI, J. - YATSYNA, Pavlo. equiangular lines in low dimensional euclidean spaces. Combinatorica. 2021, 2021(41), 839-872. ISSN 0209-9683. link

- CALDERBANK, David M. J. - SLOVAK, Jan - SOUČEK, Vladimír. Subriemannian Metrics and the Metrizability of Parabolic Geometries. Journal of Geometric Analysis. 2021, 31(2), 1671-1702. ISSN 1050-6926. link

- HUDECOVÁ, Šárka - ŠIMAN, Miroslav. Testing axial symmetry by means of directional regression quantiles. Electronic Journal of Statistics. 2021, 15(1), 2690-2715. ISSN 1935-7524. link

- DOSTALÍK, Mark - PRŮŠA, Vít - STEIN, Judith. Unconditional finite amplitude stability of a viscoelastic fluid in a mechanically isolated vessel with spatially non-uniform wall temperature. Mathematics and Computers in Simulation. 2021, 2020(16. května 2020), 1-20. ISSN 0378-4754. link

- ADAM, Lukas - BRANDA, Martin. Risk-aversion in data envelopment analysis models with diversification. Omega. 2021, 102(červenec 2021), 102338. ISSN 0305-0483. link

- GIJBELS, Irene - KIKA, Vojtěch - OMELKA, Marek. On the specification of multivariate association measures and their behaviour with increasing dimension. Journal of Multivariate Analysis. 2021, 182(March 2021), 104704. ISSN 0047-259X. link

- LAKETA, Petra N. - NAGY, Stanislav. Reconstruction of atomic measures from their halfspace depth. Journal of Multivariate Analysis. 2021, 183(February), 104727. ISSN 0047-259X. link

- ŠAROCH, Jan. Pure semisimplicity conjecture and Artin problem for dimension sequences. Journal of Pure and Applied Algebra. 2021, 225(11), 106745. ISSN 0022-4049. link

- SHAUL, Liran. Smooth flat maps over commutative DG-rings. Mathematische Zeitschrift. 2021, 2021(299), 1673-1688. ISSN 0025-5874. link

We congratulate all the rewarded authors.[2]

On behalf on Cooperatio Council V. Dolejší, June 30, 2022

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[2]The financial reward will be carried out on September/October 2022.