CURRICULUM VITAE

PERSONAL DATA

Name: Dr. Péter Biró
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Research website: www.cs.bme.hu/~pbiro/research.html

EDUCATION AND DEGREES

- Ph.D in Mathematics and Computer Science, Budapest University of Technology and Economics, 2003 – 2008
- MSc in Mathematics, Budapest University of Technology and Economics, 1997 – 2003

LANGUAGES

Hungarian (native), English (fluent), French (intermediate)

RESEARCH INTERESTS

Research areas: cooperative game theory, matching theory, mechanism design, algorithmic game theory, computational social choice

Involvements in applications: Hungarian higher education matching scheme, UK national matching scheme for kidney exchanges organised by NHS Blood and Transplant, Scottish Foundation Allocation Scheme (resident matching program)

RESEARCH EXPERIENCE/APPOINTMENTS

- Stanford University, Department of Economics, visiting professor, February 2014 – January 2015
- **Hungarian Academy of Sciences, Centre for Economic and Regional Studies, Institute of Economics, research fellow, October 2010 –**
- University of Glasgow, Department of Computing Science, Post-doctoral research assistant, June 2007 – September 2010

TEACHING EXPERIENCE

- **Corvinus University of Budapest, Department of Operations Research and Actuarial Sciences, part-time lecturer, September 2012 –**
- Budapest University of Technology and Economics, Department of Computer Science and Information Theory, Teaching assistant, September 1998 - May 2007, Discrete Mathematics, Algorithm Theory

MAIN RESEARCH GRANT/PROJECT AS PRINCIPAL INVESTIGATOR

- Heuristic problem solving in matching mechanisms, Hungarian Academy of Sciences, Cooperation of Excellences Project grant, Hungarian Academy of Sciences, 40000k HUF, November 2017 – June 2018
- Complex design of matching markets, Hungarian Academy of Sciences, Momentum grant, 100000k HUF, July 2016 – June 2021
- Cooperative games with capacities, OTKA grant, principal investigator, 15444k HUF, September 2013 – August 2016

MAIN RESEARCH GRANTS/PROJECTS AS PARTICIPANT

- Efficiency and equity in matching kindergarten and school seats and children: mechanism design approach, Estonian research grant, participant, January 2014 –
- Mathematics of Economics models, OTKA, participant, September 2013 –
- Discrete matching and assignment problems, Hungarian-Slovakian TéT fund, participant, September 2009 – August 2011
- Stable matchings and their applications, OTKA, participant, August 2007 – July 2011

FURTHER GRANTS

- 2016, MTA Grant for Conference Participation, 292k HUF, for participating in the 5th World Congress of the Game Theory Society, Maastricht, Netherlands
- 2016, IC1205 COST Action on Computational Social Choice, Grant for Short-term Scientific Mission, 1260EUR, for visiting Haris Aziz in Sydney
- 2015, IC1205 COST Action on Computational Social Choice, Grant for Short-term Scientific Mission, 630EUR, for visiting Jerome Lang in Paris
- 2013, MTA Grant for Conference Organisation, 900k HUF, for organising the Summer school on matching problems, markets and mechanisms: the first summer school of the IC1205 COST Action on Computational Social Choice
- 2012, MTA Grant for Conference Participation, 260k HUF, for participating in the 4th World Congress of the Game Theory Society, Istanbul, Turkey

ACTIVITIES IN SCIENTIFIC ORGANISATIONS

- CA15210 COST Action: European Network for Collaboration on Kidney Exchange Programmes, MC member and chair of the first working group, November 2016-
- IC1205 COST Action on Computational Social Choice, MC member and chair of the matching mechanisms working group, November 2012 – October 2016
- Matching in Practice network, member of the executive committee, December 2010 –
- János Bolyai Mathematical Society, member, June 2006 -

CONFERENCE ORGANISATION

- The 12th Workshop on Matching in Practice, 15 December 2016, Budapest - member of the organising committee
- 100 Years of Matching Theory in Hungary, 14 December 2016, Budapest - member of the organising committee
- Workshop on Future Directions in Computational Social Choice: the last workshop of the IC1205 COST Action on Computational Social Choice, 21-22 November 2016, Budapest - member of the organising committee
- MATCH-UP 2015, The Third International Workshop on Matching Under Preferences, 16-18 April 2015, Glasgow - member of the organising committee, PC co-chair
- The Second Workshop of the IC1205 COST Action on Computational Social Choice, 16-18 October 2013, Barcelona - member of the scientific committee

- Summer school on matching problems, markets and mechanisms: the first summer school of the IC1205 COST Action on Computational Social Choice, 24-28 June 2013, Budapest - member of the organising committee, local organiser
- The Fifth Workshop on Matching in Practice, 20-21 May 2013, Brussels - member of the scientific committee
- The Fourth Workshop on Matching in Practice, 15 November 2012, Barcelona - member of the scientific committee
- MATCH-UP 2012, The Second International Workshop on Matching Under Preferences, 19-20 July 2012, Budapest - member of the organising committee, local organiser, PC co-chair
- SING8, The 8th Spain-Italy-Netherlands Meeting on Game Theory , 16-18 July 2012, Budapest - member of the local organising committee
- Frontiers in Market Design: Matching Markets, 20-23 May 2012, Monte Verita, Switzerland - member of the scientific committee
- The Third Workshop on Matching in Practice, 28 November 2011, Budapest - member of the organising committee, local organiser
- The Second Workshop on Matching in Practice, 30 May 2011, Brussels - member of the scientific committee
- COMSOC workshop, an informal workshop on Computational Social Choice, 3 May 2011, Budapest - organiser

FURTHER PC MEMBERSHIPS

- MATCH-UP 2017, CoopMAS-2017, EXPLORE-2017, EC-2017, CP-2016, SCW-2016, COMSOC-2016, CoopMAS-2016, EXPLORE-2016, CoopMAS-2015, EXPLORE-2015, CoopMAS-2014, SCW-2014, CoopMAS-2013, AAMAS-2012

EDITORIAL WORK

- Associate Editor of Mathematical Social Sciences (2015 May -)
- Associate Editor of Journal of Mechanism and Institutional Design (2015 May -)
- Guest editor of a special issue in Algoritms, joint with David Manlove: Matching Under preferences (2012-2013)

JOURNAL ARTICLES

P. Biró, W. Kern, D. Paulusma and P. Wojuteczky, Stable Fixtures Problem with Payments,. To appear in Games and Economic Behavior (2017).

A. Veski, P. Biró, K. Pöder and T. Lauri, Efficiency and fair access in kindergarten allocation policy design. Journal of Mechanism and Institutional Design 2(1), (2017) 57-104.

K.Cs. Ágoston, P. Biró and Iain McBride, Integer programming methods for special college admissions problems. Journal of Combinatorial Optimization 32(4), (2016) pp:1371-1399

P. Biró, T. Fleiner and R.W. Irving, Matching couples with Scarf's algorithm. Annals of Mathematics and Artificial Intelligence, 22(A), (2016) pp:241-254

P. Biró and T. Fleiner, Fractional solutions for NTU-games, with applications to stable matchings. Discrete Optimization, 77(3), (2016) pp:303-316

P. Biró, E. Inarra and E. Molis, A new solution for the roommate problem: The Q-stable matchings. Mathematical Social Sciences, 79 (2016) pp:74-82

P. Biró, L. A. Kóczy and B. Sziklai, Fair Apportionment in the View of the Venice Commission's Recommendation. Mathematical Social Sciences, 77 (2015) pp:32-41

P. Biró and S. Kiselgof, College admissions with stable score-limits. Central European Journal of Operations Research, 23(4) (2015) pp:727-741

P. Biró, M. Bomhoff, P.A. Golovach, W. Kern and D. Paulusma, Solutions for the Stable Roommates Problem with Payments. Theoretical Computer Science, 540-541 (2014) pp:53-61

P. Biró and E.J. McDermid, Matching with sizes (or scheduling with processing set restrictions). Discrete Applied Mathematics, 164/1 (2014) pp:61-67

P. Biró, G. Norman, Analysis of Stochastic Matching Markets. International Journal of Game Theory, 42 (2013) pp:1021-1040

P. Biró and F. Klijn, Matching with Couples: a Multidisciplinary Survey. International Game Theory Review, 15(2), 1340008 (2013)

P. Biró, D.F. Manlove and E.J. McDermid, "Almost stable" matchings in the Roommates problem with bounded preference lists. Theoretical Computer Science, 432 (2012) pp:10--20

P. Biró, W. Kern and D. Paulusma, Computing solutions for matching games. International Journal of Game Theory, 41 (2012) pp:75--90

P. Biró, R.W. Irving and I. Schlotter, Stable matching with couples – an empirical study. ACM Journal of Experimental Algorithmics, 16 (2011) Article No.: 1.2

P. Biró, T. Fleiner, R.W. Irving and D.F. Manlove, The College Admissions problem with lower and common quotas. Theoretical Computer Science, 411 (2010) pp:3136–3153

P. Biró and T. Fleiner, The integral stable allocation problem on graphs. Discrete Optimization, 7/2-3 (2010) pp:64–73

P. Biró, D.F. Manlove and S. Mittal, Size versus stability in the Marriage problem. Theoretical Computer Science, 411 (2010) pp:1828–1841

P. Biró and E.J. McDermid, Three-sided stable matchings with cyclic preferences. Algorithmica, 58 (2010) pp:5–18

P. Biró, D.F. Manlove and R. Rizzi, Maximum weight cycle packing in directed graphs, with application to kidney exchange programs. Discrete Mathematics, Algorithms and Applications, 1/4 (2009) pp:499–517

P. Biró, K. Cechlárová and T. Fleiner, The dynamics of stable matchings and half-matchings for the stable marriage and roommates problem. International Journal of Game Theory, 36 (2008) pp:333–352

P. Biró and K. Cechlárová, Inapproximability of the kidney exchange problem. Information Processing Letters, 101/5 (2007) pp:199–20

CONFERENCE PAPERS

Ágoston K Cs, Biró P, Szántó R: Stable project allocation under distributional constraints. In: Proceedins of the 10th Japanese-Hungarian Symposium on Discrete Mathematics and Its Applications. pp. 43-52.

Biró P, Fleiner T, Palincza R: Designing Chess Pairing Mechanisms. In: Proceedins of the 10th Japanese-Hungarian Symposium on Discrete Mathematics and Its Applications. pp. 77-86.

H. Aziz, P. Biró, T. Fleiner, S. Gaspers, R. de Haan, N. Mattei and B. Rastegari, Stable Matching with Uncertain Pairwise Preferences. In proceedings of AAMAS 2017: the 2017 International Conference on Autonomous Agents and Multiagent Systems Pages, pages 344-352.

H. Aziz, P. Biró, S. Gaspers, R. de Haan, N. Mattei and B. Rastegari, Stable Matching with Uncertain Linear Preferences. In the Proceedings of SAGT 2016: The 9th International Symposium on Algorithmic Game Theory, volume 9928 of Lecture Notes in Computer Science, pages 195-209, Springer, 2016.

P. Biró, H. Aziz, J. Lang, J. Lesca and J. Monnot, Optimal Reallocation under Additive and Ordinal Preferences. In proceedings of AAMAS 2016: the 2016 International Conference on Autonomous Agents and Multiagent Systems Pages, pages 402-410.

P. Biró, W. Kern, D. Paulusma and P. Wojuteczky, Stable fixtures problem with payments. In Proceedings of WG 2015: the 41st International Workshop on Graph-Theoretical Concepts in Computer Science, Lecture Notes in Computer Science, Springer, 2015

P. Biró and I. McBride, Integer programming methods for special college admissions problems. In Proceedings of COCOA 2014: the 8th Annual International Conference on Combinatorial Optimization and Applications, volume 8881 of Lecture Notes in Computer Science, pages 429-443, Springer, 2014

P. Biró, I. McBride and D.F. Manlove, The Hospitals / Residents Problem with Couples: Complexity and Integer Programming Models. In Proceedings of SEA 2014: the 13th International Symposium on Experimental Algorithms, volume 8504 of Lecture Notes in Computer Science, pages 10-21, Springer, 2014

P. Biró and Tamás Fleiner, Matching couples with Scarf's algorithm. In Proceedings of the 8th Japanese-Hungarian Symposium on Discrete Mathematics and its Applications, (2013) pp:55--64

P. Biró and S. Kiselgof, College admissions with stable score-limits. In Proceedings of COMSOC 2012: 4th International Workshop on Computational Social Choice, (2012)

P. Biró, M. Bomhoff, P.A. Golovach, W. Kern and D. Paulusma, Solutions for the Stable Roommates Problem with Payments. In Proceedings of the 38th International Workshop on Graph Theoretic Concepts in Computer Science (WG), volume 7551 of Lecture Notes in Computer Science, Springer-Verlag, (2012) pp:69--80

P. Biró and T. Fleiner, Fractional solutions for NTU-games. In Proceedings of COMSOC 2010: 3rd International Workshop on Computational Social Choice, (2010)

P. Biró, W. Kern and D. Paulusma, On solution concepts for matching games. In Proceedings of the 7th Annual Conference on Theory and Applications of Models of Computation (TAMC), volume 6108 of Lecture Notes in Computer Science, Springer-Verlag, (2010) pp:117--127

P. Biró, R.W. Irving and D.F. Manlove, Popular matchings in the Marriage and Roommates problems. In Proceedings of the 7th International Conference on Algorithms and Complexity (CIAC), volume 6078 of Lecture Notes in Computer Science, Springer-Verlag, (2010) pp:97--108

P. Biró and E. McDermid, Matching with sizes (or scheduling with processing set restrictions). In Proceedings of International Symposium on Combinatorial Optimization (ISCO), volume 36 of Electronic Notes on Discrete Mathematics, Elsevier}, (2010) pp:335--342

P. Biró and E.J. McDermid, Three-sided stable matchings with cyclic preferences and the kidney exchange problem. In Proceedings of the 2nd International Workshop on Computational Social Choice (COMSOC 2008)}, (2008) pp:97--108

P. Biró, D.F. Manlove and S. Mittal, Size versus stability in the Marriage problem. In Proceedings of the 6th Workshop on Approximation and Online Algorithms (WAOA 2008), volume 5426 of Lecture Notes in Computer Science, Springer-Verlag, (2009) pp:15--28

P. Biró, Stable exchange of indivisible goods with restrictions. In Proceedings of the 5th Japanese-Hungarian Symposium on Discrete Mathematics and its Applications, (2007) pp:97--105

D.J. Abraham, P. Biró and D.F. Manlove, ``Almost stable'' matchings in the roommates problem. In Proceedings of the 3rd Workshop on Approximation and Online Algorithms (WAOA 2005), volume 3879 of Lecture Notes in Computer Science, Springer-Verlag (2006) pp:1--14

FURTHER PAPERS IN HUNGARIAN JOURNALS

P. Biró, P. Csóka, L.Á. Kóczy, R.A. Radványi, B. Sziklai, Közgazdasági Nobel-emlékdíj 2012: Alvin E. Roth és Lloyd S. Shapley (2012 Nobel Memorial Prize in Economic Sciences: Alvin E. Roth and Lloyd S. Shapley) Magyar Tudomány, 174(2) (2013) pp:190--199

P. Biró, L.Á. Kóczy, B. Sziklai, Választókörzetek igazságosan? (Fair apportionment?) Közgazdasági Szemle 59/11 (2012) pp:1165--1186

P. Biró, Társadalmi döntések számítástudománya -- egy új határterület. (Computational Social Choice - a new interdisciplinary area.) Közgazdasági Szemle 58/7-8 (2011) pp:709--715

P. Biró, Stabil párosítási modellek és ezeken alapuló központi párosító programok. Szigma 37/3-4 (2007) pp:153–175

P. Biró, K. Lója, M. Sütő, Elosztott frekvenciakiosztási algoritmusok tervezése és vizsgálata. (Development and analysis of local frequency assignment algorithms.) Hiradástechnika 17/3 (2002) pp:43-48

SELECTED CONFERENCE PRESENTATIONS AND INVITED SEMINARS

2017 Nov Stable matchings with uncertain preferences. EAADS Workshop, Kosice, Slovakia

2017 Jul An Overview of KEP Practices in Europe. INFORMS HEALTHCARE, Rotterdam, the Netherlands

2017 Jun Efficiency and fair access in kindergarten allocation policy design. 2017 Conference on Economic Design, York, UK

2017 May Stable project allocation under distributional constraints. 10th Japanese-Hungarian Symposium on Discrete Mathematics and Its Applications, Budapest, Hungary

2017 Apr Circulations under responsive preference. MATCH-UP 2017: the fourth Workshop on Matching under Preferences, Boston, USA

2017 Apr Stable project allocation under distributional constraints. Game Theory seminar at Paris School of Economics, Paris, France

2017 Mar Results of the ENC-KEP survey. 2nd Meeting of the COST Action CA15210, Paris, France

2017 Jan Stable Matching with Uncertain Linear Preferences. CoCoRICo meeting at LAMSADE-Paris Dauphine, Paris, France

2016 Jul Integer programming methods for special college admissions problems. Maastricht Matching workshop, Maastricht, Netherland

2016 Jul Circulations under responsive preference. GAMES congress, Maastricht, Netherland

2016 Jun Optimal Reallocation under Additive and Ordinal Preferences. COMSOC-2016: Sixth International Workshop on Computational Social Choice, Toulouse, France

2016 Jan Computational aspects of matching problems. Optimisation seminar at UNSW, Sydney, Australia

2015 Dec Circulations under responsive preference. MKE conference, Budapest, Hungary

2015 Dec Circulations under responsive preference. Workshop on Games and Social Choice, Budapest, Hungary

2015 Dec Matching Practices around the world. Workshop on kindergarten allocation. Tallinn, Estonia

2015 Dec Circulations under responsive preference. 10th Matching in Practice Workshop, Toulouse, France

2015 Oct Computational and game theoretical aspects of matching problems. Summer school on matchings, Moscow, Russia

2015 Aug Integer programming methods for special college admissions problems. Joint Austrian-Hungarian Mathematical Conference, Győr, Hungary

2015 Jun Integer programming methods for special college admissions problems. Dagstuhl seminar on Computational Social Choice: Theory and Application, Dagstuhl, Germany

2015 May Circulations under responsive preference. Paris Dauphine CS seminar, Paris, France

2015 Apr Stable Fixtures Problem with Payments. MATCH-UP 2015, Glasgow, UK

2015 Mar Computational aspects of matching problems. BCAM Seminar, Bilbao, Spain

2014 Dec Integer programming methods for special college admissions problems. COCOA 2014: The 8th Annual International Conference on Combinatorial Optimization and Applications, Kihei, USA

2014 Nov Computational complexity of matching problems under preferences. Invited lecture at the Market design course of Niederle and Roth, Stanford, USA

2014 Oct Stable fixtures problem with payments. Market design seminar, Stanford, USA

2014 Sep Integer programming methods for special college admissions problems. CIREQ-Concordia Seminar, Montreal, Canada

2014 Jun Stable fixtures problem with payments. SCW2014: The 12th Meeting of the Society for Social Choice and Welfare, Boston, USA

2014 Jun Integer programming methods for special college admissions problems. Decentralization conference, Palo Alto, USA

2014 May Integer programming methods for special college admissions problems. Market design seminar, Stanford, USA

2014 Apr Matching couples with Scarf's algorithm. Invited lecture at the Market design course of Kojima, Stanford, USA

2013 Dec Integer programming methods for special college admissions problems. MKE Conference 2013, Budapest, Hungary

2013 Dec Matching couples with Scarf's algorithm. 6th Workshop on Matching in Practice, Paris, France

2013 Oct Matching couples with Scarf's algorithm. GSBE-ETBC Seminar, Maastricht, Netherlands

2013 Sep Capacitated NTU-games and how to match couple with Scarf's algorithm. Workshop on Simple Games and Beyond, Paris, France

2013 Jun Matching couples with Scarf's algorithm. NEXT: Workshop on Networks and Externalities, Budapest, Hungary

2013 May Matching couples with Scarf's algorithm. 8th Japanese-Hungarian Symposium on Discrete Mathematics and its Applications, Veszprém, Hungary

2013 Feb Fractional solutions for capacitated NTU-games, with applications to stable matchings. 18th Coalition Theory Network Workshop, Warwick, UK

2013 Jan Matching markets with and without payments. Corvinus Workshop on Assignment Games, Budapest, Hungary

2012 Dec Fractional solutions for capacitated NTU-games, with applications to stable matchings. MKE Conference, Budapest, Hungary

2012 Sep College admissions with stable score-limits. COMSOC2012: The 4th Workshop on Computational Social Choice, Krakow, Poland

2012 Jul Analysis of stochastic matching markets. SING8, The 8th Spain-Italy-Netherlands Meeting on Game Theory, Budapest, Hungary

2012 Jul College admissions with stable score-limits. GAMES2012: The 4th World Congress of the Game Theory Society, Istanbul, Turkey

2012 Jun Analysis of stochastic matching markets. CoopMAS 2012: The 3rd Workshop on Cooperative Games in Multiagent Systems, Valencia, Spain

2012 May Analysis of stochastic matching markets. Frontiers in Market Design: Matching Markets, Monte Verity, Switzerland

2012 Apr Analysis of stochastic matching markets. Granada Economics Seminars, Granada, Spain

2012 Feb Analysis of stochastic matching markets. 17th Coalition Theory Network workshop, Paris, France

2011 Dec Analysis of stochastic matching markets. MKE Conference, Budapest, Hungary

2011 Sep Matching couples with Scarf's algorithm. Workshop on New Trends in Mechanism Design, Copenhagen, Denmark

2011 Jul Matching couples with Scarf's algorithm. SING7: 7th Spain-Italy-Netherlands Meeting on Game Theory, Paris, France

2011 May Matching schemes in practice. FET2011: The European Future Technologies Conference Exhibition, Budapest, Hungary

2011 May Computational and strategic issues in the Hungarian higher education matching scheme. Workshop on Computational Social Choice, Budapest, Hungary

2010 Sep Fractional solutions for capacitated NTU-games. COMSOC2010: The 3rd Workshop on Computational Social Choice, Dusseldorf, Germany

2010 May Popular matchings in the marriage and roommates problems. The 7th International Conference on Algorithms and Complexity, Rome, Italy

2010 Apr Computational and strategic issues in the mechanism design of matching schemes. Mathematics and Statistics Seminar, Stirling, UK

2010 Mar New stable matching problems arising from national matching schemes in Hungary. Workshop on Matching Theory and Mechanism Design, Oxford, UK

2009 May New stable matching problems arising from national matching schemes in Hungary. Bristol Algorithm Day, Bristol, UK

2008 Sep Three-sided stable matchings with cyclic preferences and the kidney exchange problem. COMSOC2008: The 2nd Workshop on Computational Social Choice, Liverpool, UK

2008 May Stable matching with transferable utilities: The Hungarian method and the "invisible hand" of Adam Smith. CS Theory Seminar, Durham, UK

2008 Mar The integral stable allocation problem on graphs. CO2008: International Symposium on Combinatorial Optimization, Warwick, UK

2007 Jul Higher education admission in Hungary by a score-limit algorithm. The 18th International Conference on Game Theory, Stony Brook University, USA

2007 Apr Stable exchange of indivisible goods with restrictions. 5th Japanese-Hungarian Symposium on Discrete Mathematics and its Applications, Sendai, Japan

2006 Dec Stable matchings: dynamics and complexity. Game Theory Seminar, Bilbao, Spain

2006 Jul On the dynamics of stable matching markets. The 17th International Conference on Game Theory, Stony Brook University, USA

2006 Jul Stable matchings: dynamics and complexity. CS Seminar at Penn, Philadelphia, USA

2005 Jun Stable matching with incremental algorithms: The last one gets his best stable partner. 4th Japanese-Hungarian Symposium on Discrete Mathematics and its Applications, Budapest, Hungary