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Citizenship: Belgian, British and Bosnian
Languages: Serbo-Croat (native), English (fluent), French (fluent)
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Employment after the Ph.D.

01/09/2020 – present **Researcher**, Institute of Mathematics, Czech Academy of Sciences, Prague.
01/09/2020 – present **Consultant**, Logique Consult, Paris, France.
01/09/1998 – 31/08/2020 **Professor of Mathematics**, School of Mathematics, University of East Anglia, Norwich, UK.
01/09/1995 – 31/08/1998 **Assistant Professor**, Department of Mathematics, University of Wisconsin-Madison, USA.
01/09/1993 – 31/08/1995 **Postdoctoral fellow**, Department of Mathematics, Hebrew University of Jerusalem, Israel.

Education

01/08/1990 – 16/05/1993 **PhD Mathematics**, University of Wisconsin-Madison, Madison, USA.
Thesis: Set-theoretic Approach to some problems in Measure Theory
Advisor: Kenneth Kunen
01/09/1988 – 31/07/1990 **MA Mathematics**, University of Wisconsin-Madison, Madison, USA.
01/09/1984 – 31/05/1988 **A 4 year BSc in Mathematics**, University of Sarajevo-Yugoslavia.
With Honours.

Academic awards and honours

2015 **Simons Fellowship**, Isaac Newton Institute.
Cambridge, United Kingdom
2015 **Associate Membership**, Institute de l'Histoire de la Philosophie et des Sciences.
Paris, France
2014-2015 **Leverhulme Research Fellowship**, Leverhulme Trust.
United Kingdom
2001-2007 **Advanced Fellowship**, EPSRC.
United Kingdom
1994-1995 **Forchheimer Fellowship**, Lady Davis Foundation.
Israel
1984 **Gold Medal for the Best Student**, University of Sarajevo.
Yugoslavia
1980 **1st prize**, National Mathematical Olympiad, Yugoslavia.
1979 **1st prize**, National Mathematical Olympiad, Yugoslavia.
1978 **1st prize**, National Mathematical Olympiad, Yugoslavia.

Selected grants

- 2019 **CHROMPART**, MCIF, ERC.
2010 – 2013 **EPSRC**, Support for a postdoctoral assistant, UK.
2009 – 2010 **ESF**, PI for the Network INFTY, UK.
2009 – 2010 **EPSRC**, Support for a postdoctoral assistant, UK.
1999 – 2000 **EPSRC**, Support for a postdoctoral assistant, UK.
1999 – 2001 **Leverhulme Trust**, Support for a postdoctoral assistant, UK.
1996 – 1998 **Israel-USA Binational Foundation**, Israel-USA.

Selected Editorial Posts

- 2008-present **Member of the Editorial Board**, Colloquium Mathematicum.
2013-present **Member of the Editorial Board**, Bolletino dell'Unione Matematica Italiana.
2017-2019 **co-Editor in Chief**, Sarajevo Journal of Mathematics.
2013-2016 **Editor**, Proceedings AMS.

Selected Professional Organisations and Responsibilities

- present **Member**, London Mathematical Society (MS), European MS, European Set Theory Society, Association for Symbolic Logic, French MS.
2008-2014 **Chair Logic In Europe**, Association for Symbolic Logic.
2012-2014 **President**, European Set Theory Society.
2012-2014 **Delegate of Individual Members**, European Mathematical Society.

Graduate Supervision

- Ph.D. Students**, Graduated, 12 students.
8 obtained academic posts, 2 posts in computer industry, 2 in teaching
Ph.D. Students, Current, 5 students.
Postdoctoral Assistants, 4 postdocs supervised.

Professional service

Selected Conference Organisation

- 2019 **co-Organiser**, 15th CIRM Workshop in Set Theory, Marseille, France.
2015 **co-Organiser**, Special semester on Higher Infinity (HIF), Isaac Newton Institute, Cambridge, UK.
2014 **Organiser**, LMS Lecture Series, Norwich, UK.
2009 **Organiser**, Ken Kunen is 65 conference, Madison, Wisconsin, USA.

Seminars

- 1998-2020 **Organiser**, Logic Seminar, University of East Anglia, UK .

Peer review

Reviewing for various journals, *Mathematics, Philosophy and Computer Sciences*.

Panel member, *Science foundations including EPSRC, NSF and Finnish Academy*.

Thesis Jury, *Universities around the world including Oxford, Paris 7 and Vienna*.

Selected Recent Invited Conference Talks

- 2020 **Logics that bridge the discrete and the continuous**, *Plenary Talk*, ALGOS 2020, e-conference, France.
- 2020 **New and old in Forcing**, *3 lectures Tutorial*, Days in Logic, Lisbon, Portugal.
- 2019 **Forcing**, *3 lectures Tutorial*, Panhellenic Logic Symposium, Crete, Greece.
- 2019 **Chain Logic and Shelah's Infinitary Logic**, *Plenary Talk*, 7th ESTS Conference, Vienna, Austria.
- 2019 **Logic as a Modelling Tool**, *Plenary Talk*, XIX Brazilian Logic Meeting, Joao Pessoa, Brazil.
- 2018 **Some strong logics in set theory and the logic of chains**, *Plenary Talk*, Set Theory 100 years after Cantor, Vienna, Austria.
- 2018 **Higher order logic of chains**, *Plenary Talk*, BLAST 2018 Conference, Denver, USA.

Books

1. **Mirna Džamonja**, *Fast Track to Forcing*, to appear at *Cambridge University Press* (2020)
2. **Mirna Džamonja**, *Théorie des ensembles pour les philosophes*, *Éditions Universitaires Européennes* (2017)

Selected Papers with Short Descriptions

Google Scholar Citations: 701

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h:index 15

i10-index 20

1. **Mirna Džamonja and Jouko Väänänen**, *Chain Logic and Shelah's Infinitary Logic*, to appear in *the Israel Journal of Mathematics* (2020). arXiv:1908.01177

In this paper we prove that the amazing properties that Shelah proved about the logic L_κ^1 already hold in a much simpler logic called Chain Logic. The main disadvantage of L_κ^1 is its definition through a purely semantic notion which leads to a very complex and non-constructible syntax. Chain Logic has a simple constructible syntax. We use Chu transforms to compare the two logics and give many previously unknown properties of the Chain Logic.

2. **David Buhagiar and Mirna Džamonja**, *Square compactness and the filter extension property*, to appear in *Fundamenta Mathematicae* (2020). arXiv:1909.05474

This paper engages large cardinals and topology. We show that the consistency strength of a cardinal κ being 2^κ -square compact is at least weak compact and strictly less than indescribable. This is the first known improvement to the widely larger upper bound of strong compactness obtained in 1973 by Hajnal and Juhász.

3. **Mirna Džamonja and Saharon Shelah**, On wide Aronszajn trees in the presence of MA, to appear in *the Journal of Symbolic Logic* (2020). arXiv 2002.02396

A wide Aronszajn tree is a tree of size and height ω_1 with no uncountable branches. Such trees are used in Ehrenfeucht-Fraïssé games that concern uncountable models. We prove that under $MA(\omega_1)$ there is no wide Aronszajn tree which is universal under weak embeddings. This solves a question of Mekler and Väinänen open since 1994.

4. **James Cummings, Mirna Džamonja, Menachem Magidor, Charles Morgan and Saharon Shelah**, A framework for forcing constructions at successors of singular cardinals, *Transactions of AMS*, vol. 369. no 10, (2017), pg. 7405 -7441.

Obtaining independence results at the singular cardinals and their successors is known to require large cardinals. Therefore the forcing methods need to depend on the large cardinals as well, which makes them technically very difficult. There are no forcing axioms known at such cardinals. This paper gives the best that is known so far: not a forcing axiom, but at least a framework which can be and has been used in other constructions.

5. **Piotr Borodulin-Nadzieja and Mirna Džamonja**, On the isomorphism problem for measures on Boolean algebras, *Journal of Mathematical Analysis and Applications*, vol. 405 (2013), pg. 37-51.

This paper is published in a prestigious journal in Mathematical Analysis, which does not usually publish papers in Logic. The paper is interesting to analysts is because it deals with an old question (1981) by Dorothy Maharam about extending her celebrated classification theorem of measure algebras to the case of algebras that support a finitely additive measure. Many authors had tried to extend the classification, based on Maharam's dimension, from the countably additive to the finitely additive measures. In our paper we show that even in the case of countable Maharam dimension such a classification is impossible, due to its high complexity rank in descriptive set theory. However, we propose a different invariant and obtain a classification of algebras that carry a uniformly regular finitely additive measure as exactly the subalgebras of the Jordan algebra.

6. **Uri Abraham, Robert Bonnet, James Cummings, Mirna Džamonja and Katherine Thompson**, A scattering of orders, *Transactions of the American Mathematical Society*, vol. 364 (2012), pg. 6259-6278.

In this paper we study various ramifications of Hausdorff's classification of scattered linear orders to the class of partial orders. We prove, for example, that the class of partial orders with no infinite antichains can be obtained by taking the class of well-quasi orders and closing under reversals, augmentations and lexicographical sums. The question of the relation of the two classes has been an important one in the theory of order and was asked on various occasions at least from 1970s.

7. **Mirna Džamonja and Jouko Väinänen**, Chain models, trees of singular cardinality and dynamic EF games, *Journal of Mathematical Logic*, vol. 11, no. 1 (2011), 61-85.

Published in JML, the journal currently ranked as 1st in the category of Logic by Journal Citation Reports, this paper has set the foundations of generalised descriptive set theory at singular cardinals, inspiring further work by other researchers. It has done so by studying the class of trees of singular height and size but with no unbounded branch and connecting this with chain models, on the one hand, and a special class of Ehrenfeucht-Fraïssé games on another. In addition, it has proved an exact universality result in the class of such trees, under weak embedding, which was a surprise since an independence result was expected.

8. **Mirna Džamonja, Jean A. Larson and William J. Mitchell**, A partition theorem for a large dense linear order, *Israel Journal of Mathematics* vol. 171 (2009), 237-284.

Galvin's theorem states that when pairs of rationals are coloured in any finite number of colours, then there is a copy of \mathbb{Q} whose pairs are coloured in at most two colours. Devlin's theorem obtains

similar results when pairs are being replaced by triples and so on, connecting the problem with tangent numbers. In our paper we studied the question for which cardinals κ satisfying $\kappa = \kappa^{<\kappa}$ (so that \mathbb{Q}_κ is defined), similar results can be obtained for the universal κ -dense order \mathbb{Q}_κ . We proved positive results involving large cardinals. For this we developed a \mathbb{Q}_κ -combinatorics which was later used by us and others.

9. **Mirna Džamonja**, Universality of uniform Eberlein compacta, *Proceedings of the American Mathematical Society*, vol. 134, no. 8 (2006), pg. 2427-2435.

In a 1977 paper Benyamini, Rudin and Wage asked if there is always a surjectively universal uniform Eberlein compact, for any given weight. We gave easily satisfiable sufficient conditions on cardinal arithmetic for the universal not to exist. This was contrary to the expected answer, since Benyamini, Rudin and Wage proposed a concrete construction which they thought would always give a universal element. Furthermore, we also showed that GCH is not necessary for (a small family of) universals to exist.

10. **Mirna Džamonja and Saharon Shelah**, On \triangleleft_* -maximality, *Annals of Pure and Applied Logic*, vol. 125, no. 1-3 (2004), pg. 119-158.

In this paper we introduce two notions which have later been extensively studied in model theory. Firstly, the order \triangleleft_* now known as the interpretability order. Secondly, the notions of SOP_1 and SOP_2 theories. The question inspiring these notions came from the 1970s work of Keisler on what is now called Keisler order and its relation with Shelah's classification theory. In our paper we proved a theorem that entails that under the hypothesis GCH, being maximal in Keisler's order implies SOP_2 . Maliaris and Shelah have proved in 2016 that the other direction is true with no set-theoretic assumptions. It is still not known if one can remove the hypothesis GCH from our result.

11. **Justin Tatch Moore, Michael Hrušák and Mirna Džamonja**, Parametrized \diamond principles, *Transactions of the American Mathematical Society*, vol. 356, no. 6, (2004) pg. 2281-2306.

This paper, cited 99 times so far, introduced the novel concept of a combinatorial principle based on a cardinal invariant. Cardinal invariants refer to the properties of the order of eventual domination on functions from \mathbb{N} to \mathbb{N} , which in set theory represents many properties of \mathbb{R} . A typical cardinal invariant is, for example, the smallest possible size of an unbounded set. It is important to determine relative position of various variants and it is often possible to show by forcing that a variant say \mathfrak{x} can be strictly less than another, say \mathfrak{y} . For various \mathfrak{x} we associated a combinatorial principle $\diamond_{\mathfrak{x}}$ to variants of type \mathfrak{x} and showed that in the presence of $\diamond_{\mathfrak{x}}$, the value of \mathfrak{x} is the smallest possible, ω_1 , and moreover, that standard models in which CH fails and $\mathfrak{x} = \omega_1$, also satisfy $\diamond_{\mathfrak{x}}$.

Complete Publication List

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