

What's Happening in the Mathematical Sciences and Research of Mathematics Education in the Republic of Srpska (An entity of B&H)

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Abstract. This report about research in mathematics and Mathematics Education in the Republic of Srpska is a resource for the international academic society. In this paper we expose the capacity for research in mathematics and Mathematics Education and scientific competence of researches in the Republic of Srpska during 2012-2014, as an example.

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Didactic Mathematics Classification (2010): **A10, A50**

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Mathematics teacher education is a complex and interdisciplinary enterprise requiring knowledge of teaching and learning as well as knowledge of mathematics. This argues strongly for a partnership between mathematics educators and those who teach mathematics. Thus, this report will also be an important resource for mathematics educators – mathematics teachers, future teachers and these who already teach in the Republic of Srpska.

This report should be useful to the entire community of professionals who educate teachers of mathematics, from those who teach undergraduates seeking initial certification to those who work with veteran teachers pursuing opportunities for professional development. Its audience includes professional development providers housed outside of academic institutions.

Its primary audiences are the faculty who teach in mathematics and informatics departments and their colleagues in colleges of education who have primary responsibility for the mathematical education of teachers. In addition, this report will be useful to policy-makers in the Republic of Srpska at all levels who look to the mathematics and

mathematics education community for professional guidance with respect to the mathematical education of teachers. Thus, the three main audiences are:

Mathematicians - Faculty members of mathematics and informatics departments at three- and four-year collegiate institutions teach the mathematics and informatics courses taken by prospective and practicing teachers. Their departmental colleagues set policies regarding mathematics teacher preparation.

Researchers of Mathematics Education - Researchers of Mathematics Education, whether within colleges of education, mathematics departments, or other academic units, are also an important audience for this report. Typically, they are responsible for the pedagogical education of mathematics teachers (e.g., teaching methods courses), organizing field experiences for prospective teachers and for providing overall leadership for the institution's mathematics teacher preparation program. Outside of academe, a variety of people are engaged in professional development for teachers of mathematics, including state and regional mathematics specialists.

Policy-makers. This report is also intended to inform educational administrators and policy-makers at the national, state and collegiate levels as they work to provide students with a strong mathematical preparation for the increasingly quantitative workplace.

A. Departments of Mathematics

In the Republic of Srpska there are only two departments for development of mathematicians and teacher of mathematics:

A.1. Department for Mathematics and Informatics, Faculty of Sciences and Mathematics, University of Banja Luka (<http://matinf.pmfbl.org/>), Undergraduate study (Mathematicians, B.S; Teacher of mathematics and informatics for second schools; Teacher of mathematics and Informatics for middle schools; Teacher of informatics) and Graduate - master study (Algebra and Geometry; Mathematical Analysis and Applications)

A.2. Department for Mathematics and Physics, Faculty of Philosophy, University of East Sarajevo (<http://www.ffuis.edu.ba/faculty/department/1/>), Undergraduate study (Teacher of mathematics and informatics for second schools; Teacher of mathematics and physics for second schools) and Graduate – master study (Mathematics; Informatics)

B. Societies of Mathematicians

In the Republic of Srpske there are the following societies who care about mathematics and mathematics education.

Society of Mathematicians of the Republic of Srpska

<http://www.dm.rs.ba/>

Founded 1994

Mathematical Conference of the Republic of Srpska

<http://www.mk.rs.ba/>

Founded 2011

Society of Mathematicians and Informaticians of the East Herzegovina Trebinje

<http://dmi-euklid.org/>

Founded 2005

Scientific Society of Mathematicians Banja Luka

<http://www.imvibl.org/dmbl/dmbl.htm>

Founded 2007

C. Mathematical journals

Journal of the International Mathematical Virtual Institute, ISSN (p) 2303-4866, ISSN (o) 2303-4947, <http://www.imvibl.org/JOURNALS/JOURNAL>

Publisher: International Mathematical Virtual Institute

Language: English

Founded 2011

Journal of the International Mathematical Virtual Institute is edited and published by International Mathematical Virtual Institute. The *Journal* is a continuation of the earlier publication *Bulletin of the Society of Mathematicians Banja Luka*, ISSN 0354-5792 (p), 1986-521X (o) which was founded in 1994 and whose last issue Vol. 17(2010). The *Journal* publishes original longer papers (15 or more pages) in all fields of mathematics that contained new, substantial and significant results, with complete proofs and of interest for a large number of mathematicians.

Bulletin of the International Mathematical Virtual Institute, ISSN 2303-4874 (p), ISSN (o) 2303-4955, <http://www.imvibl.org/JOURNALS/BULLETIN>

Publisher: International Mathematical Virtual Institute

Language: English

Founded 2011

Bulletin of the International Mathematical Virtual Institute is edited and published by International Mathematical Virtual Institute. The *Bulletin* is a continuation of the earlier publication *Bulletin of the Society of Mathematicians Banja Luka*, which was founded in 1994 and whose last issue Vol. 17(2010). The *Bulletin* publishes original shorter papers (less than 15 pages) in all fields of mathematics that contained new, substantial and significant results, with complete proofs and of interest for a large number of mathematicians

IMVI Open Mathematical Education Notes, ISSN (p) 2303-4882, ISSN (o) 1840-4383

http://www.imvibl.org/JOURNALS/IMVI_OMEN

Publisher: International Mathematical Virtual Institute

Language: English

Founded 2011

The Scientific Society of Mathematicians of Banja Luka established *IMVI Open Mathematical Education Notes* - an electronic journal - in order to advance mathematics education research activities by the International Mathematical Virtual Institute. The main goal of the *Notes* is to foster interaction among mathematicians and mathematics educators in the Balkans, elsewhere in Europe, and worldwide through the publication of high quality articles emphasizing mathematics education as a field of disciplined inquiry. The journal seeks to provide an online forum for professionals interested in reflecting on the wide range of experiences in the teaching of mathematics at all grade levels, from elementary to graduate. Contributions are welcomed from authors with teaching ideas that advance knowledge and practice in the field of mathematics education.

IMO – ISTRAŽIVANJE MATEMATIČKOG OBRAZOVANJA, (Research of Mathematics Education), ISSN (p) 2303-4890, ISSN (o) 1986-518X
<http://www.imvibl.org/dmbl/meso/imo/imo2.htm>
 Publisher: Scientific Society of Mathematician Banja Luka
 Language: Serbian/Croatian/Bosnian/English
 Founded 2009

MAT-KOL (Banja Luka), Matematički kolokvijum, ISSN (p) 0354-6969, ISSN (o) 1986-5228, www.imvibl.org/dmbl/dmbl.htm
 Publisher: Scientific Society of Mathematician Banja Luka
 Language: Serbian/Croatian/Bosnian/English
 Founded 1995

Society of Mathematicians of the Republic of Srpska organizes an annual conference starting in 2011. Unfortunately, Proceedings of the conference is not available international mathematical public through the Internet.

Unfinished list of scientific articles in Mathematics and Mathematics Education published in international publications during 2012-2014.

2014

- [17] Takaci, A. ; Stajner-Papuga, I. ; Maric, M. ; **Darko Drakulic**, *A note on the use of Choquet and Sugeno integrals in minimal and maximal covering location problems*, Intelligent Systems and Informatics (SISY), 2014 IEEE 12th International Symposium on Date 11-13 Sept. 2014, (pp. 159-162), ISBN: 978-1-4799-5997-6.
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- [15] **Nebojša Elez** and Dragan Djurčić, *Rapid Variability and Karamata's Integral Theorem*, Filomat, ISSN 0354-5180 (p), ISSN 2406-0933 (o), 28(3)(2014), 487–492

- [14] Milan R. Rapaić, Tomislav B. Šekara and **Vidan Govedarica**, *A novel class of fractionally orthogonal quasi-polynomials and new fractional quadrature formulas*, Applied Mathematics and Computation, ISSN: 0096-3003, Vol. 245(2014), 206–219.
- [13] **Milan Janjić** and Boris Petković, *A Counting Function Generalizing Binomial Coefficients and Some Other Classes of Integers*, Journal of Integer Sequences, ISSN (o) 1530-7638, Vol. 17 (3)(2014), Article 14.3.5
- [12] **Milan Janjić**, *A Generating Function for Numbers of Insets*, Journal of Integer Sequences, ISSN (o) 1530-7638, Vol. 17 (9)(2014), Article 14.9.7
- [11] **Sandra Kosić-Jeremić** and Ljubiša Preradović, *Achievement in university entrance examination relative to attendance in preparation classes and type of secondary school completed: a case study of geodesy undergraduate candidates*, International Journal of Education and Research, ISSN 2201-6333, Vol. 2(9)(2014), 59-70
- [10] **Dragan Matić**, *A mixed integer linear programming model and variable neighborhood search for maximally balanced connected partition problem*, Applied Mathematics and Computation, ISSN: 0096-3003, Vol. 237 (2014), 85–97
- [9] **Snježana Maksimović** and **Zoran Mitrović**, *Remark on a couple coincidence point in cone normed spaces*, International Journal of Mathematical Analysis, ISSN 1312-8876 (p), ISSN 1314-7579 (o), Vol. 8 (50) (2014), 2461 – 2468
- [8] **Zoran D. Mitrović**, *Remark on the system of nonlinear variational inclusions*. Arab J. Math. Sci. ISSN: 1319-5166, 20(1)(2014), 49-55.
- [7] **Zoran D. Mitrović** and Ivan D. Arandjelović, *Existence of generalized best approximations*. J. Nonlinear Convex Anal. ISSN 1345-4773; 1880-5221/e, 15(4)(2014), 787-792
- [6] **Miroslav Pranić** and Lothar Reichel, *Rational Gauss quadrature*, SIAM J. Numer. Anal. ISSN (p) 0036-1429, ISSN (o) 1095-7170, 52 (2)(2014), 832-851.
- [5] Thomas Mach, **Miroslav S. Pranić**, and Raf Vandebril. *Computing approximate (block) rational Krylov subspaces without explicit inversion with extensions to symmetric matrices*. Electronic Transaction on Numerical Analysis, ISSN (o) 1068-9613, 43(2014), 100-124
- [4] **Daniel A. Romano**, *The use of mathematical tasks design to establish development of students' mathematical thinking by an admission exam at Faculty of Mechanical Engineering of the Banja Luka University*, IMVI Open Mathematical Education Notes, ISSN (p) 2303-4882, ISSN (o) 1840-4383, Vol. 4(2014), 19-29
- [3] **Daniel A. Romano**, *Two new classes of relations*, In: Mateljević, Stanimirović, Marić and Svetlik (eds.) *Symposium Mathematics and Applications*, (24-25 May, 2013)

Faculty of Mathematics, University of Belgrade, Belgrade 2014, (pp. 34-39), ISBN 978-86-7589-090-4

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- [1] **Milenko Pikula**, **Vladimir Vladičić** and **Dragana Nedić**: *Inverse problems for Sturm-Liouville differential operators with a homogeneous delay*, Siberian Mathematical Journal, ISSN (p) 0037-4466, ISSN (o) 1573-9260, 55(2)(2014), 301-308

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- [19] **Nebojša Elez**, *Certain Topological Qualities of Convex Sets in Euclidean Space*, Mathematica Moravica, ISSN 1450 – 5932, 17(1)(2013), 59-62.
- [18] **Vladimir Vladičić**, **Nebojša Elez**, *Asymptotic Properties of Rapidly Varying Functions*, Mathematica Moravica, ISSN 1450 – 5932, 17(1)(2013), 75-78.
- [17] **Nebojša Elez**, **Ognjen Papaz**, *The New Operators in Topological Space*, Mathematica Moravica, ISSN 1450 – 5932, 17(2)(2013), 63-68.
- [16] **Nenojša K. Elez** and **D. Ž Djurčić**, *Some properties of rapidly varying functions*, Journal of Mathematical Analysis and Application, ISSN: 0022-247X, 401(2) (2013), 888–895.
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- [13] **V. Filipović**, **A. Kartelj** and **Dragan Matić**: *An electromagnetism metaheuristic for solving the Maximum Betweenness Problem*, Applied Soft Computing, ISSN: 1568-4946, 13(2)(2013), 1303–1313
- [12] **Zoran D. Mitrović**, *On Coupled Fixed Point Problem in Topological Vector Spaces*, Mathematical and Computer Modeling, ISSN: 0895-7177, 57(9)(2013), 2388-2392
- [11] **Romana Capor-Hrosik**, **Milan Tuba**, **Mirjana Vuković** and **Milenko Pikula**, *Face Detection by Neural Networks Based on Invariant Moments*, In: **Vladimir Marascu - Klein** (ed.), *Proceedings of the 4th International Conference on Mathematical Models for Engineering Science (MMES '13)* (pp. 45-50), ISBN: 978-1-61804-194-4

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- [1] Dejan Brcanov, Vojislav Petrovic, **Miroslav Tremel**, *Kings in Hypertournaments*, Graphs and Combinatorics, ISSN (p) 0911-0119, ISSN (o) 1435-5914, 29(3)(2013), 349-357

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- [8] H. K. Nashine, **Zoran D. Mitrović**, *Ky Fan type best approximation theorem for a class of 7 factorizable multifunctions*, Anal. Theory Appl., ISSN (p) 1672-4070, ISSN (o) 1573-8175, 28(2)(2012), 101–110.
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