

**PROJECT 174033:  
GRAPH THEORY AND MATHEMATICAL PROGRAMMING  
WITH APPLICATIONS TO CHEMISTRY AND COMPUTER  
SCIENCE**

**Publications in 2013**

**MONOGRAPHS AND CHAPTERS IN MONOGRAPHS**

1. K. Vušković,  
The world of hereditary graph classes viewed through Truemper configurations,  
invited submission, Chapter 7 in *Surveys in Combinatorics, London Mathematical  
Society Lecture Note Series* 409, edited by S.R. Blackburn, S. Gerke and M. Wildon,  
Cambridge University Press (2013), 265-325.

**JOURNAL PAPERS**

**Subproject 1: Spectral graph theory**

1. M. Anđelić, C. M. da Fonseca, T. Koledin, Z. Stanić,  
Sharp spectral inequalities for connected bipartite graphs with maximal Q-index,  
*Ars Mathematica Contemporanea*, 6 (2013), 171-185.
2. T. Koledin, Z. Stanić,  
Regular bipartite graphs with three distinct non-negative eigenvalues,  
*Linear Algebra and its Applications*, 438 (2013), 3336-3349.
3. T. Koledin, Z. Stanić,  
Regular graphs whose second largest eigenvalue is at most 1,  
*Novi Sad Journal of Mathematics*, 43(3) (2013), 145-153.
4. Z. Stanić  
Graphs with small spectral gap,  
*Electronic Journal of Linear Algebra*, 26 (2013), 417-432.
5. T. Koledin, Z. Stanić  
Regular graphs with small second largest eigenvalue,  
*Applicable Analysis and Discrete Mathematics*, 7 (2013), 235-249.
6. T. Koledin, Z. Stanić  
Some spectral inequalities for triangle-free regular graphs,

*Filomat*, 28 (2013), 1561-1567.

7. T. Koledin, Z. Stanić

Reflexive bipartite regular graphs

*Linear Algebra and its Applications*, DOI: 10.1016/j.laa.2013.07.020

URL: <http://dx.doi.org/10.1016/j.laa.2013.07.020>

8. Z. Stanić

Further results on controllable graphs,

*Discrete Applied Mathematics*, DOI: 10.1016/j.dam.2013.10.011

URL: <http://dx.doi.org/10.1016/j.dam.2013.10.011>

9. M. Anđelić, D. Cardoso, S.K. Simić,

Relations between  $(\kappa, \tau)$ -regular sets and star complements,

*Czech. Math. Journal* 63(2013), 73-90.

10. I. Sciriha, S.K. Simić,

On eigenspaces of some compound graphs,

in: Recent Results in Designs and Graphs: A tribute to Lucia Gionfriddo, *Quaderni di Matematica* 28 (2013), 401-418, Editors: M. Buratti, C. Lindner, F. Mazzocca, N.

Melone, Published by Aracne Editrice, Rome, 2013. DOI: 10.4399/978885486150323

11. P. Hic, M. Pokorný, D. Stevanović,

Remarks on Q-integral complete multipartite graphs,

*Linear Algebra Appl.* 439 (2013), 2029-2037

12. D. Stevanović, M. Milošević, P. Hic, M. Pokorný,

Proof of a conjecture on distance energy of complete multipartite graphs,

*MATCH Commun. Math. Comput. Chem.* 70 (2013), 157-162

13. L. Feng, G. Yu, A. Ilić, D. Stevanović,

The signless Laplacian spectral radius of graphs on surfaces,

*Linear Multilinear Algebra* 61 (2013), 573-581

14. T. M. Aleksić, M. Petrović,

Cacti Whose Spread is Maximal,

*Graphs and Combinatorics*, 2013, DOI: 10.1007/s00373-013-1373-1.

15. M. Anđelić, A. Erić, C.M. da Fonseca,

Nonsingular acyclic matrices with full number of P-vertices,

*Linear Multilinear Algebra* 61(1), (2013), 49-57.

16. D. Cvetković, I. Jovanović,

Network alignment using self-returning walks,

*Bull. Acad. Serbe Sci. Arts, Cl. Sci. Math. Natur., Sci. Math.* 38, (2013), 45-63.

## Subproject 2: Chemical graph theory

1. N. Ramos-Berdullas, S. Radenković, P. Bultinck, M. Mandado, Aromaticity of Closed-Shell Charged Polybenzenoid Hydrocarbons, *Journal of Physical Chemistry A* **117** (2013), 4679–4687.
2. I. Gutman, S. Radenković, M. Antić, J. Đurđević, A test of Clar aromatic sextet theory, *Journal of Serbian Chemical Society* **78** (2013), 1539–1546.
3. S. Radenković, M. Antić, J. Đurđević, S. Jeremić, Electronic structure study of the biradical pleiadene-like molecules, *Monatshefte für Chemie* – in press (DOI: 10.1007/s00706-013-1114-4)
4. S. Gojak-Salimović, I. Gutman, J. Đurđević, M. Janošević, Cyclic Conjugation in Benzo-annelated Ovalenes, *Bulletin of the Chemists and Technologists of Bosnia and Herzegovina*, **40** (2013), 17-20
5. S. Marković, J. Đurđević, M. Vukosavljević, Z. Petrović, Mechanistic Insight into Alkylation of the Ethyl Acetoacetate Anion with Different Ethyl Halides, *Russian Journal of Physical Chemistry A*, **87** (2013), 2207-2213
6. K. Xu, M. Liu, K. C. Das, I. Gutman, B. Furtula, A survey on graphs extremal with respect to distance-based topological indices, *MATCH Communications in Mathematical and Computer Chemistry* **71** (2014), 461–508.
7. I. Gutman, B. Furtula, J. Tošović, M. Essalih M. El Marraki, On terminal Wiener indices of kenograms and plerograms, *Iranian Journal of Mathematical Chemistry* **4** (2013), 77–89.
8. I. Gutman, B. Furtula, M. B. Ahmadi, S. A. Hosseini, P. S. Nowbandegani, M. Zarrinderakht, The ABC index conundrum, *Filomat* **27** (2013), 1075–1083.
9. B. Furtula, I. Gutman, Comparing energy and Randić energy, *Macedonian Journal of Chemistry and Chemical Engineering* **32** (2013), 117–123.
10. B. Furtula, Odd-vertex-degree trees maximizing Wiener index, *Kragujevac Journal of Mathematics* **37** (2013), 129–134.

11. I. Gutman, M. Essalih, M. E. Marraki, B. Furtula,  
Why plerograms are not used in chemical graph theory? The case of terminal–Wiener index,  
*Chemical Physics Letters* **568-569** (2013), 195–197.
12. B. Furtula, I. Gutman, M. Dehmer,  
On structure-sensitivity of degree-based topological indices,  
*Applied Mathematics and Computation* **219** (2013), 8973–8978.
13. B. Furtula, I. Gutman, H. Lin,  
More trees with all degrees odd having extremal Wiener index,  
*MATCH Communications in Mathematical and Computer Chemistry* **70** (2013), 293–296.
14. H. Shabani, A. R. Ashrafi, I. Gutman, B. Furtula,  
On extensions of Wiener index,  
*MATCH Communications in Mathematical and Computer Chemistry* **69** (2013) 589–596.
15. B. Liu, Lj. Pavlović, J. Liu, T. Divnić, M. Stojanović,  
On the conjecture of Aouchiche and Hansen about the Randić index,  
*Discrete Mathematics*, Vol. 313, Issue 3 (2013), 225-235.
16. T. Divnić, Lj. Pavlović,  
Proof of the first part of the conjecture of Aouchiche and Hansen about the Randić index,  
*Discrete Applied Mathematics*, Vol.161, Issues 7-8,(May 2013), 953-960.
17. T. Divnić, M. Milivojević, Lj. Pavlović,  
Extremal graphs for the geometric-arithmetic index with given minimum degree,  
*Discrete Applied Mathematics*, Vol. 162 (2014), 386-390.
18. Z. Vukičević-Kovijanić, D. Stevanović,  
Bicyclic graphs with extremal values of PI index,  
*Discrete Appl. Math.* 161 (2013), 395-403
19. A. Vasilyev, D. Stevanović,  
MathChem: a Python package for calculating topological indices,  
*MATCH Commun. Math. Comput. Chem.* 71 (2014), 657-680

### **Subproject 3: Mathematical programming**

1. J. Kratica, Đ. Dugošija, A. Savić,  
A new mixed integer linear programming model for the multi level uncapacitated facility location problem,  
*Applied Mathematical Modelling*, (2013) DOI:10.1016/j.apm.2013.10.012

2. J. Kratica,  
An electromagnetism-like metaheuristic for the uncapacitated multiple allocation p-hub median problem,  
*Computers & Industrial Engineering*, 66 (2013), 1015–1024.
3. M. Čangalović, J. Kratica, V. Kovačević-Vujčić, M. Stojanović,  
Minimal doubly resolving sets of prism graphs,  
*Optimization*, 62(8) (2013) , 1037-1043.
4. A. Savić, J. Kratica, V. Filipović,  
A new nonlinear model for the two-dimensional rectangle packing problem,  
*Publications de l'Institut Mathematique, Nouvelle serie, tome 93 (107) (2013) , 95-107.*
5. V. Korać, J. Kratica, A. Savić,  
An improved genetic algorithm for the multi level uncapacitated facility location problem,  
*International Journal of Computers, Communications & Control*, 8(6) (2013) , 845-853.
6. J. Kratica,  
An electromagnetism-like method for the maximum set splitting problem,  
*Yugoslav Journal of Operations Research*, 23(1) (2013) , 31-41.
7. T. Davidović, T. Jakšić, D. Ramljak, M. Šelmić, D. Teodorović,  
MPI Parallelization Strategies for Bee Colony Optimization,  
*Optimization*, 62(8), (2013), 1113-1142.
8. V. Maraš, J. Lazić, T. Davidović, N. Mladenović,  
Routing of Barge Container Ships by Mixed-Integer Programming Heuristics,  
*Applied Soft Computing*, 13(8), (2013), 3515-3528.

#### **Subproject 4: Structural graph theory and algorithms**

1. M.V.G. da Silva, K. Vušković,  
Decomposition of even-hole-free graphs with star cutsets and 2-joins,  
*Journal of Combinatorial Theory B* 103 (2013), 144-183.
2. M. Radovanović, K. Vušković,  
A class of three-colorable triangle-free graphs,  
*Journal of Graph Theory* 72 (4) (2013), 430-439.
3. P. Aboulker, M. Radovanović, N. Trotignon, T. Trunck, K. Vušković,  
Linear balanceable and subcubic balanceable graphs,  
*Journal of Graph Theory* DOI:10.1002/jgt.21728

## **Subproject 5: Graph spectra in computer science**

1. D. Stevanović,  
Comment on Subgraph centrality in complex networks,  
*Phys. Rev. E* 88 (2013), 026801
2. D. Stevanović,  
Remarks on dynamic load balancing of integer loads and integral graphs,  
*Appl. Math. Comput.* 226 (2014), 38-43
3. M-G. Yoon, D. Cvetković, P. Rowlinson, Z. Stanić  
Controllability of multi-agent dynamical systems with a broadcasting control signal  
*Asian Journal of Control*, DOI: 10.1002/asjc.793  
URL: <http://dx.doi.org/10.1002/asjc.793>

## **Papers in conference proceedings**

1. P. Maksimović, T. Davidović,  
Parameter Calibration in the Bee Colony Optimization Algorithm,  
in Proc. 11th *Balkan Conf. on Operational Research*, BALCOR 2013,  
Beograd-Zlatibor, Sept. 07-11 (2013), 255-264.
2. M. Čangalović, N. Nikolić, I. Grujičić,  
Symmetry Properties of Resolving Sets in Hypercubes,  
in Proc. 11th *Balkan Conf. on Operational Research*, BALCOR 2013,  
Beograd-Zlatibor, Sept. 07-11 (2013), 48-54.
3. Z. Dražić, M. Čangalović, V. Kovačević-Vujčić,  
A Metaheuristic Approach to the Dominating Tree Problem,  
in Proc. 11th *Balkan Conf. on Operational Research*, BALCOR 2013,  
Beograd-Zlatibor, Sept. 07-11 (2013), 216-220.
4. S. Antić, L. Đorđević, M. Čangalović, K. Kostić,  
A Metaheuristic Approach to Solving a Multiproduct EOQ-Based Inventory Problem  
with Storage Space Constraints,  
in Proc. 11th *Balkan Conf. on Operational Research*, BALCOR 2013,  
Beograd-Zlatibor, Sept. 07-11 (2013), 228-234.

## **Papers accepted for publication**

1. T. G. Crainic, T. Davidović, D. Ramljak,  
Designing Parallel Meta-heuristic Methods,  
in: M. Despotović-Zrakić, V. Milutinović, A. Belić (eds.),

2. T. Jakšić Krüger, T. Davidović, D. Teodorović, M. Šelmić,  
The Bee Colony Optimization algorithm and its Convergence,  
*Int. J. of Bio-Inspired Computation*, Special Issue on: "Theoretical Analysis and  
Benchmarking of Nature-Inspired Algorithms".
3. I. Jovanović, Z. Stanić  
Spectral distances of graphs based on their different matrix representations,  
*Filomat*
4. M. Anđelić, D. M. Cardoso,  
Spectral characterization of families of split graphs,  
*Graphs Combin.*
5. I. Gutman, B. Furtula, Ş. B. Bozkurt,  
On Randić energy,  
*Linear Algebra and its Applications*