

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

**Publications in 2012**

**MONOGRAPHS AND CHAPTERS IN MONOGRAPHS**

1. X. Li, Y. Shi I. Gutman,  
*Graph Energy*, Springer,  
New York, 2012, pp. XI+266.
2. I. Gutman, Y. Zhang, M. Dehmer, A. Ilić,  
Altenburg, Wiener, and Hosoya polynomials,  
in: I. Gutman, B. Furtula (Eds.), *Distance in Molecular Graphs - Theory*, University of  
Kragujevac, Kragujevac, 2012, pp. 49–70.

**DOCTORAL DISSERTATIONS**

1. Tatjana Aleksić,  
*Grafovi čija je najmanja karakteristična vrednost minimalna u nekim klasama grafova*,  
(Graphs whose least eigenvalue is minimal in some classes of graphs, Serbian), doctoral  
thesis, University of Kragujevac, Faculty of Science, September 2012, Supervisor  
Miroslav Petrović

**JOURNAL PAPERS**

**Subproject 1: Spectral graph theory**

1. M. Anđelić, C.M.da Fonseca, S.K. Simić, and D.V. Tošić,  
Some further bounds for the Q-index of nested split graphs,  
*J. Math. Sci. (N. Y.)* **182** (2012), no. 2, 193-198.
2. M. Anđelić, C.M.da Fonseca, S.K. Simić, and D.V. Tošić,  
Connected graphs of fixed order and size with maximal Q-index: some spectral bounds,  
*Discrete Appl. Math.* **160** (2012), no. 4-5, 448-459.
3. M. Anđelić, C.M.da Fonseca, T. Koledin, Z. Stanić,  
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*Ars Math. Contemp.* **6** (2013), no. 1, 171-185.

4. M. Anđelić, T. Koledin, Z. Stanić,  
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*Electronic Journal of Linear Algebra*, **24**(2012), 181-201.

5. I. Jovanović, Z. Stanić,  
Spectral distances of graphs,  
*Linear Algebra and its Applications*, **436**(2012), 1425-1435.

6. Z. Stanić,  
Some graphs whose second largest eigenvalue does not exceed  $\sqrt{2}$ ,  
*Linear Algebra and its Applications*, **437**(2012), 1812-1820.

7. M. Milatović, Z. Stanić,  
The nested split graphs whose second largest eigenvalue is equal to 1,  
*Novi Sad Journal of Mathematics*, **42**(2012), 33-42.

8. I. Gutman, B. Furtula, E. O. D. Andriantiana, M. Cvetić,  
More trees with large energy and small size,  
*MATCH Commun. Math. Comput. Chem.* **68** (2012) 697–702.

9. T. Tamizh Chelvam, S. Raja, I. Gutman,  
Strongly regular integral circulant graphs and their energies,  
*Bulletin of International Mathematical Virtual Institute* **2** (2012) 9–16.

10. I. Gutman,  
Comparative studies of graph energies,  
*Bulletin de l'Académie Serbe des Sciences et des Arts (Classe des Sciences Mathématiques et Naturelles)* **144** (2012) 1–17.

11. I. Gutman,  
Bounds for all graph energies,  
*Chemical Physics Letters* **528** (2012) 72–74.

12. G.H. Fath-Tabar, A.R. Ashrafi, D. Stevanović,  
Spectral Properties of Fullerenes,  
*J. Comput. Theor. Nanos.* **9** (2012), 327–329.

13. D. Stevanović, M. Petković, M. Bašić,  
On the Diameter of Integral Circulant Graphs,  
*Ars Combinatoria* **106** (2012), 495–500.

14. M. Lepović,  
On strongly regular graphs with  $m_2 = qm_3$  and  $m_3 = qm_2$ ,  
*Serdica Math. J.* **37**(2011), 353-364.

15. B. Liu, Lj. Pavlović, J. Liu, T. Divnić, M. Stojanović,  
On the conjecture of Aouchiche and Hansen about the Randić index,  
*Discrete Mathematics*, **313**(3) (2013), 225-235.

## **Subproject 2: Chemical graph theory**

1. K. C. Das, K. Xu, I. Gutman,  
Comparison between Kirchhoff index and the Laplacian–energy–like invariant,  
*Linear Algebra and Its Applications* **436** (2012) 3661–3671.

2. H. Abdo, D. Dimitrov, I. Gutman,  
On the Zagreb indices equality,  
*Discrete Applied Mathematics* **160** (2012) 1–8.

3. I. Gutman, S. Wagner,  
The matching energy of a graph,  
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4. M. Ghorbani, M. Songhori, I. Gutman,  
Modified Narumi–Katayama index,  
*Kragujevac Journal of Science* **34** (2012) 57–64.

5. I. Gutman, M. Ghorbani,  
Some properties of the Narumi–Katayama index,  
*Applied Mathematics Letters* **25** (2012) 1435–1438.

6. J. Liu, I. Gutman, Z. Mu, Y. Zhang,  
 $q$ -Wiener index of some compound trees,  
*Applied Mathematics and Computation* **218** (2012) 9528–9535.

7. B. Furtula, I. Gutman, M. Ivanović, D. Vukičević,  
Computer search for trees with minimal  $ABC$  index,  
*Applied Mathematics and Computation* **219** (2012) 767–772.

8. M. Eliasi, A. Iranmanesh, I. Gutman,  
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 $q$ -Analog of Wiener index,  
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10. I. Gutman, B. Furtula, M. Ivanović,  
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11. R. Cruz, I. Gutman, J. Rada,  
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13. K. C. Das I. Gutman, B. Horoldagva,  
Comparing Zagreb indices and coindices of trees,  
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14. Y. Zhang, Z. Zhang, W. Chen, I. Gutman, Y. Li,  
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15. K. C. Das, I. Gutman, B. Furtula,  
On atom–bond connectivity index,  
*Filomat* **26** (2012) 733–738.
16. I. Gutman, L. Feng, G. Yu,  
On the degree resistance distance of unicyclic graphs,  
*Transactions on Combinatorics* **1**(2) (2012) 27–40.
17. T. Réti, I. Gutman,  
Relations between ordinary and multiplicative Zagreb indices,  
*Bulletin of International Mathematical Virtual Institute* **2** (2012) 133–140.
18. B. Arsić, I. Gutman, K. C. Das, K. Xu,  
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*Bulletin de l'Académie Serbe des Sciences et des Arts (Classe des Sciences Mathématiques et Naturelles)* **144** (2012) 59–70.
19. H. S. Ramane, A. B. Ganagi, I. Gutman,  
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*Kragujevac Journal of Mathematics* **36** (2012) 59–62.
20. K. P. Narayankar, S. B. Lokesh, V. Mathad, I. Gutman,  
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*Kragujevac Journal of Mathematics* **36** (2012) 77–83.
21. C. Adiga, A. Bayad, I. Gutman, A. S. Shrikanth,  
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*Kragujevac Journal of Science* **34** (2012) 39–56.

22. I. Gutman,  
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*Zeitschrift für Naturforschung* **67a** (2012) 403–406.

23. D. Vukičević, J. Đurđević, I. Gutman,  
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*Polycyclic Aromatic Compounds* **32** (2012) 36–47.

24. Z. Zhang, Y. Zhang, I. Gutman,  
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*Journal of Biomolecular Structure and Dynamics* **29** (2012) 1081–1088.

25. I. Gutman, J. Tošović, S. Radenković, S. Marković,  
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*Indian Journal of Chemistry* **51A** (2012) 690–694.

26. J. Đurđević, I. Gutman,  
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*Macedonian Journal of Chemistry and Chemical Engineering* **31** (2012) 1–15.

27. M. Marković, J. Đurđević, I. Gutman,  
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rylenes,  
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29. Z. Du, A. Ilić,  
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31. S. Radenković, J. Đurđević, P. Bultick,  
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*Physical Chemistry Chemical Physics* **14** (2012) 14067–14078.

32. S. Radenković, I. Gutman, P. Bultinck,  
Comparative study of aromaticity in tetraoxa[8]circulenes,

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33. D. Deb, S. Duley, S. Radenković, P. Bultinck, P. K. Chattaraj, M. Bhattacharjee, Heterotrimetallic compounds containing Mo-M-Li [M = K, Rb and Cs] clusters: synthesis, structure, bonding, aromaticity and theoretical investigations of  $\text{Li}_2\text{M}_2$  [M = K and Rb] and  $\text{Cs}_4$  Rings,

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34. I. Gutman, J. Đurđević, S. Radenković, Z. Matović, Anomalous cyclic conjugation in the perylene/bisanthrene homologous series, *Monatshefte für Chemie*, **143** (2012) 1649-1653.

35. S. Radenković, P. Bultinck, I. Gutman, J. Đurđević, On induced current density in the perylene/bisanthrene homologous series, *Chemical Physics Letters*, **552** (2012) 151-155.

36. M. Dehmer, M. Grabner, B. Furtula, Structural discrimination of networks by using distance, degree and eigenvalue-based measures, *PLoS ONE* **7** (7) (2012) e38564.

37. H. Shabani, A. R. Ashrafi, I. Gutman, B. Furtula, On extensions of Wiener index, *MATCH Commun. Math. Comput. Chem.* **69** (2013) 589-596.

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39. D. Stevanović, M. Milanič, Improved Inequality between Zagreb Indices of Trees, *MATCH Commun. Math. Comput. Chem.* **68** (2012), 147–156.

40. Ž. Vukićević-Kovijanić, D. Stevanović, Bicyclic graphs with extremal values of PI index, *Discrete Appl. Math.* **161** (2013), 395-403.

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Location of zeros of Wiener and Distance Polynomial,  
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### **Subproject 3: Mathematical programming**

1. J. Kratica, V. Kovačević-Vujčić, M. Čangalović, M. Stojanović,  
Minimal doubly resolving sets and the strong metric dimension of some convex  
polytopes,  
*Applied Mathematics and Computation*, **218**(19), (2012), 9790–9801.

2. N. Mladenović, J. Kratica, V. Kovačević-Vujčić, M. Čangalović,  
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problems,  
*European Journal of Operational Research*, **220** (2012), 328–337.

3. J. Kratica, V. Kovačević-Vujčić, M. Čangalović, M. Stojanović,  
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*Applicable Analysis and Discrete Mathematics*, **6**(1), (2012), 63–71.

4. J. Kratica, T. Kostić, D. Tošić, Đ. Dugošija, V. Filipović,  
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*Computer Science and Information Systems - COMSIS*, **9**(1), (2012), 49-62.

5. J. Kratica,  
An electromagnetism-like approach for solving the low autocorrelation binary sequence  
problem,  
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6. T. Davidović, M. Šelmić, D. Teodorović, D. Ramljak,  
Bee Colony Optimization for Scheduling Independent Tasks to Identical Processors,  
*Journal of Heuristics*, **18**(4), (2012) , 549-569.

7. N. Mladenović, D. Urošević, S. Hanafi, A. Ilić,  
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10. D. Matić, J. Kratica, V. Filipović, Đ. Dugošija,  
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*Electronic Notes in Discrete Mathematics*, **39** (2012), 241-248.

12. T. Divnić, Lj. Pavlović,  
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#### **Subproject 4: Structural graph theory and algorithms**

1. N. Trotignon and K. Vušković,  
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*Journal of Combinatorial Theory B* **102**(1) (2012) 153-185.

2. P. Charbit, M. Habib, N. Trotignon and K. Vušković,  
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*Journal of Discrete Algorithms*, **17**, (2012), 60-66.

3. P. Aboulker, M. Radovanović, N. Trotignon and K. Vušković,  
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*SIAM Journal on Discrete Mathematics*, **26**(4) (2012), 1510-1531.

4. D. Stevanović,  
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*Appl. Math. Comput.* **219** (2012), 1082-1086.

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*Discrete Appl. Math.* **160** (2012) 344-351.

6. A. Ilić, S. Klavžar, Y. Rho,  
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*Appl. Anal. Discrete Math.* **6** (2012) 82-94.

8. A. Ilić, S. Klavžar, Y. Rho,



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

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*Applicable Analysis and Discrete Mathematics*, **6**(2012), No. 1, 1-30.

3. D. Cvetković,  
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4. D. Cvetković,  
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### **Papers in conference proceedings**

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3. S. Kordić, B. Dragović, T. Davidović, N. Kovač,  
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*Proc. International Association of Maritime Economists Conference, IAME 2012*  
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4. T. Davidović, J. Lazić, N. Mladenović, S. Kordić, N. Kovač, B. Dragović, B.,  
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5. M. Rašajski, Z. Radosavljević, B. Mihailović,  
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Bounds for the second largest eigenvalue of a connected graph with a cut-vertex,  
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7. V. Filipović, J. Kratica, A. Savić, Đ. Dugošija,  
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1. Davidović, T., Jakšić, T., Ramljak, D., Šelmić, M., Teodorović, D., MPI Parallelization Strategies for Bee Colony Optimization, *OPTIMIZATION, Special Issue entitled "Advances in Discrete Optimization"*, dedicated to BALCOR 2011.  
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2. T. G. Crainic, T. Davidović, D. Ramljak, DESIGNING PARALLEL META-HEURISTIC METHODS, In *High Performance and Cloud Computing in Science and Education*, Despotović-Zrakić, M., Milutinović, V., Belić, A., (eds.) 2012. (Accepted), CIRRELT Research Report [CIRRELT-2012-28](#).
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9. T. Koledin, Z. Stanić, Regular bipartite graphs with three distinct non-negative eigenvalues, to appear in *Linear Algebra and its Applications*

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14. I. Gutman, J. Djurdjević, Z. Matović, M. Marković,  
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15. J. Kratica,  
A mixed integer quadratic programming model for the low autocorrelation binary  
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17. I. Gutman, B. Furtula, M. B. Ahmadi, S. A. Hosseini, P. S. Nowbandegani, M.  
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18. I. Sciriha, S.K. Simić,  
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*Quaderni di Matematica della Seconda Università di Napoli*, to appear.
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*Discrete Applied Mathematics* (2012), doi: 10.1016/j.dam.2012.11.004 .