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# THE AWARD OF THE SERBIAN ACADEMY OF SCIENCES AND ARTS FOR MATHEMATICAL AND RELATED SCIENCES FOR 2013

(Presented at the 4th Meeting, held on May 30, 2014)

The award of the Serbian Academy of Sciences and Arts for mathematical and related sciences for 2013 has been given to Zoran Marković, Miodrag Mihaljević, Nenad Mladenović, Zoran Ognjanović and Slobodan K. Simić, Research Professors, Mathematical Institute of the Serbian Academy of Sciences and Arts, for distinguished achievements in the area of Discrete Mathematics applied to Computer Science in the period 2003 – 2012. The group of laureates has been inaugurated at a ceremony in the Serbian Academy of Sciences and Arts on November 19, 2013.

The jury, which consisted of Academicians Dragoš Cvetković (Chair), Aleksandar Ivić and Mileva Prvanović, had a difficult job to decide to whom to give the award among 11 good candidates, 7 of them individual and 4 group candidates.

Here we quote parts of the jury decision.

The group deserves the award on the basis of several criteria: numerous scientific results of high quality published in good journals and monographs, parallel work on theoretical and applied mathematics, including development of patents and software implementation, big number of citations, leading and coordinating successful scientific projects, organization of scientific meetings and work with young researchers.

Slobodan K. Simić works in the area of graph theory and, in particular, spectral graph theory. This theory has many applications in Computer Science as can be seen from Simić's survey papers *Graph Spectra in Computer Science* and *Graph Spectral Techniques in Computer Sciences*. Simić has dealt with applications of spectral graph theory in the field of multiprocessors and control theory. He published, together with some coauthors, two internationally recognized scientific monographs: *Spectral Generalizations of Line Graphs* and *An Introduction to the Theory of Graph Spectra*, both published by Cambridge University Press, Cambridge, in 2004 and 2009 respectively. These books and his papers have been cited over 1500 times in the literature.

Nenad Mladenović introduced in 1990's a specific methodology (meta-heuristic) for approximate solving optimization problems - Variable Neighborhood Search. This meta-heuristic has been in the period 2003 - 2012 widely accepted by researchers in Operations Research. Mladenović published in this period several papers in which his method was further developed and applied to various optimization problems. Mladenović is mostly cited Serbian researcher in the area of Operations Research (at that time his $h$-index was equal to 27 and $g$-index to 74). In 2012 he became the member of Academia Eurpaea (London).

Miodrag Mihaljević works in the area of Cryptology. His results include new methods for checking security of cryptographic algorithms and the construction of new algorithms for protection of information, authentication and management of cryptographic keys. The results have been published in more than 50 scientific papers published in relevant publications which have been cited over 1600 times. Mihaljević has 6 internationally granted patents in the area of Cryptology.

Zoran Ognjanović and Zoran Marković have achieved important results in areas of mathematical logic, theoretical computing and digitization of national heritage. Among other thing, they have been working on construction of axiomatic systems and on proving their strong completeness and decidability for probability, temporal, dynamic logics. The results are published in several dozens of papers which have been cited more than 600 times.

The group members are leaders of the following scientific projects:

New contributions to Cryptology techniques (M. Mihaljević),

Mathematical models and methods in optimization of large systems (N. Mladenović),

Graph Theory and Mathematical Programming with Applications to Chemistry and Computer Science (S.K. Simić),

Development of new information-communication technologies, using advanced mathematical methods, with applications to Telecommunications, Energy Production and Protection of National Heritage (Z. Ognjanović).

Members of these projects were supervisors for about 40 doctoral theses.

Z. Marković, being the director of the Mathematical Institute of the Serbian Academy of Sciences and Arts, has successfully coordinated the work of the mentioned projects.

Dragoš Cvetković