Dear reader,

in front of you is the final act of a very successful conference *Theoretical Computer Science 04* (TCS) which took place as a sub-conference of the multiconference *Information Society 04* on October 9th – 15th 2004. The program committee of TCS received 23 contributions from 8 countries. After a thorough reviewing process it selected 12 papers to be presented at the conference. However, since the program committee wanted to bring the TCS conference closer to a general public, it decided to invite 10 contributions to a special, poster session. Besides these talks was at the conference also presented an invited talk by Prof. Ian Munro from University of Waterloo, Canada, with a title *Succinct Data Structures*.

Members of the program committee were:
- Andrej Brodnik, University of Primorska, Chairman
- Stefano Crespi-Reghizzi, Technical University Milano
- Roberto Grossi, University of Pisa
- Marjan Mernik, University of Maribor
- Bojan Mohar, University of Ljubljana
- Peter Paule, Research Institute for Symbolic Computation (RISC), Linz
- Marko Petkovšek, University of Ljubljana
- Tomaž Pisanski, University of Ljubljana
- Borut Robič, University of Ljubljana
- John Shawe-Taylor, University of Southampton
- Boštjan Vilfan, University of Ljubljana
- Gerhard J. Woeginger, University of Twente
- Janez Žerovnik, University of Maribor

The program committee also received an invitation to publish the best papers from the conference as a special part of ***Informatica*** journal. The committee decided to invite authors of four contributions:
- Miklós Bartha and Miklós Krész, *Deterministic soliton graphs*,
- Sergio Cabello, Matt DeVos and Bojan Mohar, *Expected case for projecting points*,
- Hovhannes A. Harutyunyan and Calin D. Morosan, *The spectra of Knödel graphs*, and
- Bojan Mohar, *On the crossing number of almost planar graphs*.

The authors were asked to thoroughly review their papers and extend them for journal publication. The rewritten papers were reviewed once more and now they are in front of you.

All four papers are on graphs and their use in solving various problems. In the first paper Bartha and Krész study soliton graphs. The soliton graphs are related to deterministic automata and the authors show how and when they can be reduced to simpler and more normal structures (chestnut graphs, generalized trees, and graphs having a unique perfect matching) not affecting their properties.

Cabello et al. in the second paper consider a set of n points in a plane where a distance between any pair of points is at least one. They project these points on a random line which they split into segments (cells) of length one – such a line is called a graduated line. In the paper they show an upper bound of $O(n^{2/3})$ for the expected concentration of projections on a graduated line. Their result is relevant in Computational Geometry for sweepline algorithms when the sweeping direction is chosen at random.

In the third paper Harutyunyan and Morosan study Knödel graphs. The Knödel graphs are applicable in distributed computing as they can be used for data broadcasting. The important property of Knödel graphs is their spectrum and authors in the paper show how to compute the spectra of Knödel graphs using results of Fourier analysis, circulant matrices and PD-matrices. From these results they derive the formula to compute the number of spanning trees each of which can be used to broadcast data in the graph.

In the last paper Bojan Mohar answers on a question posed by Riskin whether a crossing number of a graph G_0+xy is equal to d, where G_0 is a 3-connected cubic planar graph, and $x, y \in V(G)$ at a dual distance d. The answer is negative and holds also for 5-connected graphs planar graphs.

Andrej Brodnik