



Foreword as scientific editor of the special issue of Discrete Applied Mathematics on Interconnection networks (582pp)

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Interconnection networks. — Edited by J.C. Bermond. — Reprinted from the journal "Discrete applied mathematics", vol. 37/38, 1992. — Topics in discrete mathematics, vol. 5. — Un vol. relié, 20 × 27, de 581 p. — — North-Holland, Amsterdam, 1992.

The aim of the book is to gather 40 articles born of a specialized workshop, dealing with all the combinatorial aspects of interconnection networks, in particular in view of their use in parallel computing. New constructions are proposed based on different tools from discrete mathematics. Many new records have been established in the table of the maximum number of vertices of graphs. Properties of these networks (and of more classical ones) are analyzed in many of the other papers. About 40% of the articles deal with fault tolerance or vulnerability properties using either combinatorial tools or probabilistic ones.

Foreword

The idea of editing a special issue on Interconnection Networks came from discussions with many other researchers, particularly during specialized workshops. This idea was enthusiastically supported by P.L. Hammer who proposed that it could be a special issue of Discrete Applied Mathematics which we have called DAMIN. The aim was to gather articles dealing with all the combinatorial aspects of Interconnection Networks, in particular in view of their use in Parallel Computing.

The call for papers was sent at the end of 1988 with a deadline of June 1989 to researchers in Combinatorics and in Computer Science. It turned out to be more successful than planned. From the 54 articles that were submitted 40 were finally accepted covering various aspects of the subject.

As the reader can see, most of the articles deal with static or point to point Interconnection Networks. In particular, new constructions are proposed based on different tools from Discrete Mathematics. Many new records have been established in the table of the maximum number of vertices of graphs with maximum degree Δ and diameter D . At the end of this issue we give an updated table. Properties of these networks or of more classical ones are analyzed in many of the other papers; in particular about 40% of the accepted articles deal with fault tolerance or vulnerability properties using either combinatorial tools or probabilistic ones.

Altogether the papers collected in DAMIN, and the problems they solve or propose, represent an important stream of research. Our hope is that it will stimulate further research in the field and find many applications in Parallel Computing. Clearly DAMIN does not cover all aspects of the subject especially all of the algorithmic aspects. That might be the subject of other special issues such as the one planned on the topic of Broadcasting and Gossiping.

Editing such an issue has been a big job (bigger than planned!), but a very interesting one. It would have been impossible without the help of many persons. I would especially like to thank the referees for their careful reports. There was an average of three referees per article and many articles were revised more than once. Both the high quality of the articles in this issue and the high percentage of accepted papers are direct consequences of the extensive comments provided by most of the referees. Finally, special thanks are due to C. Delorme and C. Peyrat whose help has been considerable.

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Guest Editor