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BOOK REVIEW

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P. G. SZABÓ, M. Cs. MARKÓT, T. CSENDES, E. SPECHT, L. G. CASADO – I. GARCÍJA: *New Approaches to Circle Packing in a Square (With Program Codes)*, Springer, Berlin, 2007.

Let us quote exactly a part of the Preface of the book:

"The authors had intended this volume to be a summary of results achieved in the past few years, providing the reader with a comprehensive view of the theoretical and computational achievements. One of the major aims was to publish all the programming codes used. The checking performed by the wider scientific community has helped in having the computational proofs accepted. The open source codes we used will enable the interested reader to improve on them and solve problem instances that still remain challenging, or to use them as a starting point for solving related application problems. The present book can be recommended for those who are interested in discrete geometrical problems and their efficient solution techniques. The volume is also worth reading by operation research and optimization experts as a report or as a case study of how utilization of the problem structure and specialities enable verified solutions of the previously hopeless high-dimensional nonlinear optimization problem with nonlinear constraints. The outlined history of the whole solution procedure provides a balanced picture of how theoretical results, like repeated patterns, lower and upper bounds on possible optimum values, and approximate stochastic optimization techniques, supported the

final resolution of the original problem.

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Now, as to the content of the book, it is divided into 12 Chapters, an Appendix and 7 Sections, resp., as follows.

The Sections:

The Chapters:

The titles of the chapters indicate their contents. Quite interesting are Chapters 6–9, which are presenting the most up to date methods ($\sim$ using interval arithmetics) to compute (in some sense optimal) configurations. Especially interesting is the Appendix A, where for all $3 \leq n \leq \leq 200$, perfect solutions of the problems for n circles are presented, giving exact values of their radia and showing the exact geometric pictures of their optimal placements in the unit square.

Summa-summarum: The book is a perfect up to date presentation of the topics, both from the mathematical ($\sim$ geometrical) and computational, resp., points of view. Let us note that the two Hungarian co-authors of the book ($\sim$ T. Csendes, P. G. Szabó), are the members of a team (at the University of Szeged, Hungary) which was (about 12 years ago) deeply involved in the proof of the Kepler conjecture. This latter fact implies a question: what about writing a book about the three dimensional version of the topics?