

Contents

Preface	
JACOB E. GOODMAN, JÁNOS PACH, AND RICHARD POLLACK	vii
Musings on discrete geometry and “20 years of Discrete & Computational Geometry”	
BRANKO GRÜNBAUM	1
State of the union (of geometric objects)	
PANKAJ K. AGARWAL, JÁNOS PACH, AND MICHA SHARIR	9
Metric graph theory and geometry: a survey	
HANS-JÜRGEN BANDELT AND VICTOR CHEPOI	49
Extremal problems for convex lattice polytopes: a survey	
IMRE BÁRÁNY	87
On simple arrangements of lines and pseudo-lines in \mathbb{P}^2 and \mathbb{R}^2 with the maximum number of triangles	
NICOLAS BARTHOLDI, JÉRÉMY BLANC, AND SÉBASTIEN LOISEL	105
The computational complexity of convex bodies	
ALEXANDER BARVINOK AND ELLEN VEOMETT	117
Algorithmic semi-algebraic geometry and topology – recent progress and open problems	
SAUGATA BASU	139
Expansive motions	
ROBERT CONNELLY	213
All polygons flip finitely ... right?	
ERIK D. DEMAINE, BLAISE GASSEND, JOSEPH O’ROURKE, AND GODFRIED T. TOUSSAINT	231
Persistent homology—a survey	
HERBERT EDELSBRUNNER AND JOHN HARER	257
Recent progress on line transversals to families of translated ovals	
ANDREAS HOLMSEN	283
An improved, simple construction of many halving edges	
GABRIEL NIVASCH	299
Unfolding orthogonal polyhedra	
JOSEPH O’ROURKE	307

The discharging method in combinatorial geometry and the Pach-Sharir conjecture RADOŠ RADOIČIĆ AND GÉZA TÓTH	319
Pseudo-triangulations—a survey GÜNTER ROTE, FRANCISCO SANTOS, AND ILEANA STREINU	343
Line problems in nonlinear computational geometry FRANK SOTTILE AND THORSTEN THEOBALD	411
On empty hexagons PAVEL VALTR	433
k -sets and k -facets ULI WAGNER	443
An Erdős-Szekeres type problem for interior points XIANGLIN WEI AND REN DING	515
The kissing number, blocking number and covering number of a convex body CHUANMING ZONG	529
Open problems EDITED BY JÁNOS PACH	549