LIST OF PUBLICATIONS
Jiří Matoušek

Books

1. *Invitation to Discrete Mathematics*
   with Jaroslav Nešetřil

2. *Geometric Discrepancy. An Illustrated Guide*
   Revised second printing 2010.

3. *Lectures on Discrete Geometry*

4. *Using the Borsuk–Ulam theorem. Lectures on topological methods in combinatorics and geometry*
   Revised second printing 2008.

5. *Understanding and using linear programming*
   with Bernd Gärtner

6. *Thirty three miniatures (Mathematical and algorithmic applications of linear algebra)*

7. *Approximation Algorithms and Semidefinite Programming*
   with Bernd Gärtner

Research papers in journals

8. *Approximate symmetric derivative and monotonicity*

9. *Few colored cuts or cycles in edge colored graphs*

10. *Line arrangements and range search*

11. *On polynomial-time decidability of induced minor-closed classes*
    with J.Nešetřil and R.Thomas
12. A typical property of the symmetric differential quotient  

13. Selecting a small well-discriminating subset of tests  
   with J. Schindler  

14. On-line computation of convolutions  

15. NP-hardness results for intersection graphs  
   with J.Kratochvíl  

16. Construction of \( \varepsilon \)-nets  
   Extended abstract:  

17. Extension of Lipschitz mappings on metric trees  

18. Bi-Lipschitz embeddings into low-dimensional Euclidean spaces  

19. Algorithms finding tree-decomposition of graphs  
   with R. Thomas  

20. Lower bound on the length of monotone paths in arrangements  

21. Approximate halfplanar range counting  

22. Spanning trees with low crossing number  
   Informatique théorique et applications 6,25(1991) 103–123.

23. Computing dominances in \( E^n \)  

24. String graphs requiring huge representations  
   with J.Kratochvíl  

25. Cutting hyperplane arrangements  
   Extended abstract:  

26. Randomized optimal slope selection  

27. Hercules versus Hidden Hydra Helper  
   with M. Loebl  
28. *Good splitters for counting points in triangles*  
   with E. Welzl  
   Extended abstract:  

29. *Note on bi-Lipschitz embeddings into normed spaces*  

30. *Relative neighborhood graphs in three dimensions*  
   with P. K. Agarwal  

31. *Efficient partition trees*  
   Extended abstract:  

32. *Reporting points in halfspaces*  
   Extended abstract:  

33. *On the complexity of finding iso- and other morphisms for partial k-trees*  
   with R. Thomas  

34. *Ramsey-like properties for bi-Lipschitz embeddings of finite metric spaces*  

35. *Farthest neighbors, maximum spanning trees and related problems in higher dimensions*  
   with P. K. Agarwal and S. Suri  

36. *On vertical ray shooting in arrangements*  

37. *Linear optimization queries*  
   new version, with O. Schwarzkopf:  

38. *Ray shooting and parametric search*  
   with P. K. Agarwal  

39. *Range searching with efficient hierarchical cuttings*  

40. *On ray shooting in convex polytopes*  
   with O. Schwarzkopf  
41. *Discrepancy and approximations for bounded VC-dimension*  
   with E. Welzl and L. Wernisch  
   Extended abstract:  

42. *On the sum of squares of cell complexities in hyperplane arrangements*  
   with B. Aronov and M. Sharir  
   Extended abstract:  

43. *On range searching with semialgebraic sets*  
   with P. K. Agarwal  

44. *Fat triangles determine linearly many holes*  
   with J. Pach, M. Sharir, S. Sifrony and E. Welzl  
   pages 49–58.

45. *Lower bound for a subexponential optimization algorithm*  

46. *Ham-sandwich cuts in* $\mathbb{R}^d$  
   with C.-Y. Lo and W. Steiger  

47. *Intersection graphs of segments*  
   with J. Kratochvíl  

48. *Complexity of projected images of convex subdivisions*  
   with Tomio Hirata, Xue-Hou Tan and Takeshi Tokuyama  

49. *A Ramsey-type result for planar convex sets*  
   with D. Larman, J. Pach and J. Töröcsik  

50. *Derandomizing an output-sensitive convex hull algorithm in three dimensions*  
   with B. Chazelle  

51. *On enclosing* $k$ *points by a circle*  

52. *Dynamic half-space range reporting and its applications*  
   with P. K. Agarwal  
   Extended abstract, including also results of D. Eppstein:  
53. Approximations and optimal geometric divide-and-conquer

54. On Ramsey sets in spheres
   with V. Rödl

55. Tight upper bounds for the discrepancy of half-spaces

56. An elementary approach to lower bounds in geometric discrepancy
   with Bernard Chazelle and Micha Sharir

57. Piecewise linear paths among convex obstacles
   with M. de Berg and O. Schwarzkopf

58. On stabbing triangles by lines in 3-space
   with Boris Aronov

59. On vertical decomposition of arrangements of hyperplanes in four dimensions
   with L. Guibas, D. Halperin and M. Sharir

60. Note on the colored Tverberg theorem

61. On geometric optimization with few violated constraints

62. Discrepancy in arithmetic progressions
   with Joel Spencer

63. On the distortion required for embedding finite metric spaces into normed spaces

64. A deterministic algorithm for the three-dimensional diameter problem
   with O. Schwarzkopf

65. On linear-time deterministic algorithms for optimization problems in fixed dimension
   with B. Chazelle

66. Improved upper bounds for approximation by zonotopes
67. A subexponential bound for linear programming
   with M. Sharir and E. Welzl

68. On discrepancy bounds via dual shatter function

69. A Helly-type theorem for unions of convex sets

70. On embedding expanders into $\ell_p$ spaces

71. On functional separately convex hulls
   with Petr Plecháč

72. An $L_p$ version of the Beck-Fiala conjecture

73. Guarding galleries where every point sees a large area
   with Gil Kalai

74. Computing many faces in arrangements of lines and segments
   with Pankaj K. Agarwal and Otfried Schwarzkopf

75. Constructing levels in arrangements and higher order Voronoi diagrams
   with Pankaj K. Agarwal, Mark de Berg and Otfried Schwarzkopf

76. An $O(n \log n)$ randomized algorithm for the repeated median line estimator
   with D. Mount and N. Netanyahu

77. On the $L_2$-discrepancy for anchored boxes

78. The exponent of discrepancy is at least 1.0669

79. On constants for cuttings in the plane

80. On the discrepancy for boxes and polytopes

81. Almost-tiling the plane with ellipses
   with Krystyna Kuperberg, Wlodzimierz Kuperberg, and Pavel Valtr
82. *A highly non-smooth norm on Hilbert space*
   with Eva Matoušková

83. *Visibility and covering by convex sets*
   with Pavel Valtr

84. *Product range spaces, sensitive sampling and derandomization*
   with H. Brönnimann and B. Chazelle

85. *On the signed domination in graphs*

86. *On embedding trees into uniformly convex Banach spaces*

87. *On the linear and hereditary discrepancies*

88. *Discrepancy of point sequences on fractal sets*
   with Hansjörg Albrecher and Robert Tichy

89. *On approximate geometric k-clustering*

90. *On the discrepancy for Cartesian products*

91. *Simultaneous partitions of measures by k-fans*
   with Imre Bárány

92. *On directional convexity*

93. *Lower bound on the minus-domination number*

94. *On dominated l₁ metrics*
   with Yuri Rabinovich

95. *A lower bound for families of Natarajan dimension d*
   with Paul Fischer

96. *Lower bounds on the transversal numbers of d-intervals*

97. *Random lifts of graphs III: independence and chromatic number*
   with Alon Amit and Nathan Linial
98. *Separating an Object from its Cast*
   with Hee-Kap Ahn, Mark de Berg, Prosenjit Bose, Siu-Wing Cheng, Dan Halperin, and Otfried Schwarzkopf

99. *Equipartition of two measures by a 4-fan*
   with Imre Bárány

100. *On the chromatic number of Kneser hypergraphs*

101. *Transversal numbers for hypergraphs arising in geometry*
    with Noga Alon, Gil Kalai, and Roy Meshulam

102. *A lower bound for weak epsilon-nets in high dimension*

103. *A lower bound on the size of Lipschitz subsets in dimension 3*

104. *A fractional Helly theorem for convex lattice sets*
    with Imre Bárány

105. *On restricted min-wise independence of permutations*
    with Miloš Stojaković
    Extended abstract in proc. of EUROCOMB 2003.

106. *Low-distortion embeddings of trees*
    with Robert Babilon, Jana Maxová, and Pavel Valtr

107. *The one-round Voronoi game*
    with Otfried Cheong, Sariel Har-Peled, and Nathan Linial

108. *No Helly theorem for stabbing translates by lines in \( R^3 \)*
    with Andreas Holmsen

109. *Bounded VC-dimension implies a fractional Helly theorem*

110. *Topological lower bounds for the chromatic number: A hierarchy*
    with Günter M. Ziegler

111. *Crossing number, pair-crossing number, and expansion*
    with Petr Kolman
112. *New constructions of weak epsilon-nets*
   with Uli Wagner

113. *A combinatorial proof of Kneser’s conjecture*

114. *The randomized integer convex hull*
   with Imre Bárány

115. *Triangles in random graphs*
   with Martin Loebl and Ondřej Pangrác

116. *Expected length of the longest common subsequence for large alphabets*
   with Marcos Kiwi and Martin Loebl

117. *Bounded-degree graphs have arbitrarily large geometric thickness*
   with János Baránd David Wood

118. *Discrepancy after adding a single set*
   with Jeong Han Kim and Van Ha Vu

119. *The number of unique-sink orientations of the hypercube*

120. *On k-Sets in four dimensions*
   with Micha Sharir, Shakhar Smorodinsky, and Uli Wagner

121. *RANDOM EDGE can be exponential on abstract cubes*
   with Tibor Szabó

122. *On-line conflict-free colorings for intervals*
   with Ke Chen, Amos Fiat, Haim Kaplan, Meital Levy, Elchanan Mossel, János Pach, Micha Sharir, Shakhar Smorodinsky, Uli Wagner, and Emo Welzl

123. *Segmenting object space by geometric reference structures*
   with Pankaj K. Agarwal and David Brady

124. *Berge’s theorem, fractional Helly, and art galleries*
   with Imre Bárány
125. *Quadratically many colorful simplices*  
with Imre Bárány  

126. *The distance trisector curve*  
with Tetsuo Asano and Takeshi Tokuyama  

127. *Packing cones and their negatives in space*  
with Imre Bárány  

128. *Removing degeneracy may require a large dimension increase*  
with Petr Škovroň  

129. *Zone diagrams: existence, uniqueness, and algorithmic challenge*  
with Tetsuo Asano and Takeshi Tokuyama  

130. *Induced trees in triangle-free graphs*  
with Robert Šámal  

131. *Large monochromatic components in two-colored grids*  
with Aleš Privetivý  

132. *Removing degeneracy in LP-type problems revisited*  

133. *Dimension gaps between representability and collapsibility*  
with Martin Tancer  

134. *Violator spaces: structure and algorithms*  
with Bernd Gärtner, Leo Rüst, and Petr Škovroň  

135. *Graph coloring with no large monochromatic components*  
with Nathan Linial, Or Sheffet, and Gábor Tardos  

136. *On variants of the Johnson–Lindenstrauss lemma*  
137. *Computing D-convex hulls in the plane*  
with Vojtěch Franěk  

138. *LC reductions yield isomorphic simplicial complexes*  

139. *How many points can be reconstructed from k projections?*  
with Aleš Privětivý and Petr Škovroň  

140. *Blocking visibility for points in general position*  

141. *Stabbing simplices by points and flats*  
with Boris Bukh and Gabriel Nivasch  

142. *Distance k-sectors exist*  
with K. Imai, A. Kawamura, D. Reem, and T. Tokuyama  

143. *Inapproximability for metric embeddings into Rd*  
with Anastasios Sidiropoulos  

144. *The number of unit distances is almost linear for most norms*  

145. *Hardness of embedding simplicial complexes in Rd*  
with Uli Wagner and Martin Tancer  

146. *Lower bounds for weak epsilon-nets and stair-convexity*  
with Boris Bukh and Gabriel Nivasch  

147. *The t-pebbling number is eventually linear in t*  
with Michael Hoffmann, Yoshio Okamoto, and Philipp Zumstein  

148. *On the nonexistence of k-reptile tetrahedra*  
with Z. Safernová  

149. *Reachability by paths of bounded curvature in convex polygons*  
with Hee-kap Ahn, Otfried Cheong, and Antoine Vigneron  
150. *A geometric proof of the colored Tverberg theorem*
with Martin Tancer and Uli Wagner

151. *A doubly exponentially crumbled cake*
with Tobias Christ, Andrea Francke, Heidi Gebauer, and Takeaki Uno

152. *Simple proofs of classical theorems in discrete geometry via the Guth–Katz polynomial partitioning technique*
with Haim Kaplan and Micha Sharir

153. *Unit distances in three dimensions*
with Haim Kaplan, Zuzana Safernová and Micha Sharir

154. *Minimum and maximum against k lies*
with M. Hoffmann, Y. Okamoto, and P. Zumstein.

155. *Vectors in a box*
with K. Buchin, R. Moser, and D. Pálvölgyi

156. *Zone diagrams in Euclidean spaces and in other normed spaces*
with A. Kawamura, and T. Tokuyama

157. *The determinant bound for discrepancy is almost tight*

158. *Higher-order Erdős–Szekeres theorems*
with Marek Eliáš

159. *Polynomial-time homology for simplicial Eilenberg–MacLane spaces*
with Marek Krčál and Francis Sergeraert

160. *On range searching with semialgebraic sets II*
with Pankaj K. Agarwal and Micha Sharir.

161. *Near-optimal separators in string graphs*
162. Extendability of continuous maps is undecidable
    with Martin Čadek, Marek Krčál, Lukáš Vokřínek, and Uli Wagner

163. On Gromov’s method of selecting heavily covered points
    with Uli Wagner

164. Lower bounds on geometric Ramsey functions

165. Erdős–Szekeres-type statements: Ramsey function and decidability in dimension 1
    with Boris Bukh

166. Computing all maps into a sphere
    with Martin Čadek, Marek Krčál, Francis Sergeraert, Lukáš Vokřínek, and Uli Wagner
    J. ACM 61,3(2014), Article No.: 17.

167. Curves in $\mathbb{R}^d$ intersecting every hyperplane at most $d + 1$ times
    with Imre Bárány and Attila Pór

168. Computing higher homotopy groups is $W[1]$-hard
    To appear in Fundamenta Informaticae.

169. Untangling two systems of noncrossing curves
    with Eric Sedgwick, Martin Tancer, and Uli Wagner

170. Embddability in the 3-sphere is decidable
    with Eric Sedgwick, Martin Tancer, and Uli Wagner

171. Simplifying inclusion-exclusion formulas
    with Xavier Goaoc, Pavel Paták, Zuzana Safernová, and Martin Tancer

172. Polynomial-time computation of homotopy groups and Postnikov systems in fixed dimension
    with Martin Čadek, Marek Krčál, Lukáš Vokřínek, and Uli Wagner
Surveys and expository notes

173. Epsilon-nets and computational geometry

174. Derandomization in computational geometry

175. Geometric range searching

176. Geometric set systems

177. Mathematical snapshots from the computational geometry landscape

178. Geometric computation and the art of sampling (tutorial)

179. Low-distortion embeddings of discrete metric spaces
with Piotr Indyk

180. Minimum independence number of a Hasse diagram
with Aleš Přívětivý

181. The dawn of an algebraic era in discrete geometry?

182. String graphs and separators

Conference contributions not published in journals, papers in special volumes

183. On undecidability of the weakened Kruskal theorem
with M. Loebl

184. On perfect codes in a random graph
with J. Kratochvíl and J. Malý

185. Computing the center of planar point sets
186. *How to net a lot with a little: Small $\varepsilon$-nets for disks and halfspaces*  
with R. Seidel, E. Welzl

187. *On Lipschitz mappings onto a square*  
In: The Mathematics of Paul Erdős II (R. Graham, J. Nešetřil ed.), Springer-Verlag 1997,  
pages 303–309.

188. *The complexity of the lower envelope of segments with h endpoints*  
with Pavel Valtr  
Bolyai Society Math. Studies 6, Intuitive Geometry, Budapest (Hungary), 1995, J. Bolyai  

189. *Integer points in rotating convex bodies*  
with Imre Bárány  
in: Discrete and Computational Geometry – The Goodman-Polack Festschrift (B. Aronov,  

190. *Towards asymptotic optimality in probabilistic packet marking*  
with Micah Adler and Jeff Edmonds  

191. *Nonexistence of 2-reptile simplices*  

192. *Extending continuous maps: polynomiality and undecidability*  
with Martin Čadek, Marek Krčál, Lukáš Vokřínek, and Uli Wagner  

**Technical reports**

193. More on cutting arrangements and spanning trees with low crossing number  

194. *A simple proof of the weak zone theorem*  

**Manuscripts submitted for publication and in preparation**

195. *Three-monotone interpolation*  
with Josef Cibulka and Pavel Paták  

196. *Multilevel polynomial partitions and simplified range searching*  
with Zuzana Safernová

**Book manuscripts, lecture notes**

197. *The probabilistic method*  
with Jan Vondrák  
Lecture notes, ca. 60pp., KAM Series.

with Tomáš Valla (first author)  
199. *Metric embeddings*
   available on-line, 125 pages.

December 4, 2014