Alexander Y. GROSBERG

Professor of Physics & Mathematics, New York University

Curriculum Vitae

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Education: **1982:** Doctor of Sciences, Phys. & Math. from Moscow State University;
1975: Ph.D., Supervisor Prof. Ilya Lifshitz, from Inst. for Phys. Problems;
1972: M.Sc. from Moscow State University.

Employment:

New York University:	**2008 -:** Professor of Physics and Mathematics
University of Minnesota:	**1999-2008:** Professor of Physics.
MIT, Department of Physics:	**1993-99:** Visiting scientist.
Moscow Physical-Technical Institute:	**1989-93:** Professor of Biophysics.
Institute of Chemical Physics, Russian Ac. Sci.:	**1972-99:** from Young Researcher to Head of Sector.

Honors: USSR Prize in Physics for Young Scientists, 1982;
Fellow, American Physical Society, 2003;
Fellow, Institute of Physics, London, 2004;
Humboldt Award for Senior US scientists, 2006;
American Physical Society Outstanding Referee, 2008.

Papers: $\sim$ 275 scientific publications, 16 reviews.

Citations: $\gtrsim$ 20000 citations total (Google Scholar) or $\gtrsim$ 13000 (Web of Knowledge), $\sim$ 1000 (Google Scholar) or $\sim$ 650(Web of Knowledge) in 2022; h-index 68 (Google Scholar) or 62 (Web of Knowledge)

Books:

- *Statistical Physics of Macromolecules* – Moscow, Nauka, 1989 (*in Russian*)
  – New York, AIP Press,1994
- *Physics in the World of Polymers* – Moscow, Nauka, 1989 (*in Russian*)
- *Giant Molecules: here, there, and everywhere...* – Academic Press, 1997
- Editor: *I.M.Lifshitz and Cond. Matter Theory* – Phys. Reports, v. 288, Elsevier, 1997.
- Editor: *Theor. & Math. Models in Polym. Res.* – Academic Press, 1998.
- *Lectures on Disordered Polymers* – University of Lausanne, 1997.
- *Giant Molecules: here, there, and everywhere...* – World Scientific, 2010
- *Polymers and Biopolymers: Physics Viewpoint* – Intellect, 2010 (*in Russian*)
- *Macromolecules in Natural Environments* – Yoshioka-Shoten, 2016 (*in Japanese*)
- *Ubiquitous Giants* – Science Press, 2020 (*in Chinese*)

Visiting professorships:

- Bar Ilan University, Physics Department, 1993
- Tel Aviv University, Physics Department, 2004
- Orsay, 2005
- Bar Ilan University, Physics Department, 2006
- Institute for Polymer Research, Mainz, 2007
- Universitet Pierre et Marie Curie, Paris, 2010
- Institute Curie, Paris, 2014

PhD Students:

A. Zhestkov	PhD 1980	Professor, Physics, Chelyabinsk University, Russia;
E. Shakhnovich	PhD 1981	Professor, Chemistry, Harvard University;
S. Nechaev	PhD 1987	CR1, Institute de Physique Nucleaire, Orsay, France;
D. Kuznetsov	PhD 1987	Vice-President, Intellidyn Corp, Hingham, MA;
E. Kaganova	PhD 1989	Massachusetts General Hospital, Boston, MA;
D. Pakhomov	PhD 1989	Research manager, Pharmaceutical Company, Moscow;
I. Gabashvili	PhD 1991	Ingenuity Systems; Adjunct Professor, San Jose State University;
N. Khroustova	PhD 1994	Leading Researcher, Inst. Biochemical Physics, Moscow;
V. Pande	PhD 1995	Professor, Chemistry & Computer Science, Stanford;
R. Du	PhD 1999	(+ MD 2000) Professor, Harvard Medical School;
J. Chuang	PhD 2002	Professor, Biology, University of Connecticut;
R. Lua	PhD 2005	Tour Guide, NASA, Houston, Texas;
N. Moore	PhD 2006	Professor, Physics, Winona State University, Minnesota;
Longhua Hu	PhD 2007	Postdoctoral fellow, NIH;
P. Rowghanian	PhD 2013	Postdoctoral fellow, University of California, Santa Barbara;
J. Smrek	PhD 2015	Lise Meitner Fellow, University of Vienna;
C. Sandford	PhD 2017	Internship in London, UK;
W. Srinin	PhD 2019	Lecturer, Naresuan University, Thailand
M. Wang	PhD 2021	Postdoctoral researcher, University of Massachusetts Amherst
I. Eshghi	PhD 2023	Postdoctoral researcher, New York University

Service:

- *Online Journal Club for Condensed Matter Physics*, Organizer (2014-)
- *Aspen Center for Physics*, General member (2008-); Trustee (2018-)
- *Physical Review E*, Editorial Board member (2010-2017)
- *Journal of Physics A: Math. & Gen.*, Editorial Board member (2002-2009)
- *Physica A*, associate editor (1999-)
- *Co-organized meetings*
  "Coulomb Effects in Biological Physics" (Minneapolis, 2001),
  "Biological Physics" (Aspen, 2002),
  "Coulomb Effects in Chemical and Biological Physics" (Minneapolis, 2004),
  "Physics Inspired by Biology" (Aspen, 2006),
  "Physics Ideas Inspired by Biological Systems" (Minneapolis, 2007),
  "Single chain experiments" (APS Portland, 2010),
  "Biology Frontier of Soft Matter Physics" (KITP Santa Barbara Program and Conference, 2011).
  "Statistical mechanics away from detailed balance" (APS Boston, 2012 & Baltimore, 2013).
  "Polymers in Soft and Biological Matter" (Boulder School, July 2012).
  "Biological Physics of Chromatin" (KITP Santa Barbara Program and Conference, 2020).
- Referee in much more journals and grant agencies than I would ever want

Teaching (since 2000):

- "*Mathematical Methods in Physics*" (2000, 2001, 2003, 2004)
- "*Introduction to Solid State Physics*" (2001, 2002)
- "*Introduction to Biopolymer Physics*" (2002, 2003, 2005, 2006)
- "*Introductory Physics for Life Sciences*" (2004, 2005, 2006)
- "*Biological Physics, Macroscopic*" (2007), "*Biological Physics, Molecular*" (2008)
- "*Introduction to Condensed Matter Physics*" (undergraduate) (2009)
- "*Non-equilibrium Statistical Physics*" (2009, 2011, 2013, 2015, 2017, 2019, 2021) (graduate)
- "*Statistical Physics*" (2010, 2011, 2012, 2013, 2014, 2015, 2016) (graduate)
- "*Classical Dynamics*" (2010) (undergraduate)
- "*Electrodynamics*" (2012) (undergraduate)
- "*Soft Matter*" (2016, 2018, 2020, 2022) (graduate)
- "*Statistical and Thermal Physics*" (2017) (undergraduate)
- "*Phase Transitions and Critical Phenomena*" (2018, 2019, 2020, 2021, 2023) (graduate)

Alexander Y. GROSBERG **List of Publications**

Inverse chronological order. **Current as of May 5, 2023**

In Publication Pipeline

271. Cato Sandford, Daniel Seeto, and Alexander Y. Grosberg "*Active Sorting of Particles and the Gibbs Mixing Paradox*",

270. Iraj Eshghi, Alexandra Zidovska, Alexander Y. Grosberg "*Model chromatin flows: numerical analysis of linear and nonlinear hydrodynamics inside a sphere*"

269. Iraj Eshghi, Alexandra Zidovska, Alexander Y. Grosberg "*Activity-Driven Phase Transition Causes Coherent Flows of Chromatin*"

268. Andrew Schmidt, Alexander Y. Grosberg, and Anna Grosberg "*ATP Utilization in the Maintenance of Contractile Stress in Striated Muscle - Stochastic-Mechanical Model of a Half-Sarcomere*"

Published

267. Iraj Eshghi, Alexandra Zidovska, Alexander Y. Grosberg "*Symmetry-Based Classification of Forces Driving Chromatin Dynamics*" Soft Matter, v. **18**, p. 8134 - 8146, 2022.

266. Kirill E. Polovnikov, Sergei K. Nechaev, and Alexander Y. Grosberg "*Stretching of a fractal polymer around a disc reveals Kardar-Parisi-Zhang scaling*," Physical Review Letters, v. **129**, 097801, 2022.

265. Itay Azizi, Alexander Y. Grosberg, and Yitzhak Rabin "*Reentrant Transitions in a Mixture of Small and Big Particles Interacting via Soft Repulsive Potential*," Physical Review E, v. **105**, L032604, 2022.

264. Michael Wang, Ketsia Zinga, Alexandra Zidovska, and Alexander Y. Grosberg "*Tethered tracer in a mixture of hot and cold Brownian particles: can activity pacify fluctuations?*," Soft Matter, v. **17**, p. 9528 - 9539, 2021.

263. Alexander Y. Grosberg "*Scaling Conjecture Regarding the Number of Unknots among Polygons of $N \gg 1$ Edges*," Physics, v. **3**, n. 3, p. 664–668, 2021.

262. Daniele Parisi, Salvatore Costanzo, Youncheol Jeong, Junyoung Ahn, Taihyun Chang, Dimitris Vlassopoulos, Jonathan D. Halverson, Kurt Kremer, Ting Ge, Michael Rubinstein, Gary S. Grest, Watee Srinin, and Alexander Y. Grosberg "*Nonlinear Shear Rheology of Entangled Polymer Rings*," Macromolecules, v. **54**, n. 6, p. 2811 - 2827, 2021.

261. Alexander Y. Grosberg, and Yitzhak Rabin "*Non-Equilibrium Interaction Between Catalytic Colloids: Boundary Conditions and Penetration Depth*," Soft Matter, v. **16**, p. 7414 - 7420, 2020; arXiv:2002.07292

260. Michael Wang and Alexander Y. Grosberg "*Three-body problem for Langevin dynamics with different temperatures*," Phys. Rev. E, v. **101**, n. 3, 032131, 2020

259. Alexander Y. Grosberg "*Comment on "Osmotic pressure of compressed lattice knots"*," Phys. Rev. E, v. **101**, n. 1, 016501, 2020

258. Alexander Y. Grosberg "*Human bloodsucking parasite in service of materials science*," Proc. Natl. Ac. Sci. USA, v. **117**, n. 1, p. 18-20, 2020

257. Yitzhak Rabin, and Alexander Y. Grosberg "*Nanorheology of Polymer Solutions: A Scaling Theory*," Macromolecules, **52**, n. 18, p. 6927 – 6934, 2019

256. Josh Kelly, Alexander Y. Grosberg, Robijn Bruinsma "*Generalized Flory Theory for Rotational Symmetry Breaking of Complex Macromolecules*," Phys. Rev. Letters, **122**, n. 12, 128003, 2019 arXiv:1809.01047

255. Michael Wang, and Alexander Y.Grosberg "*Dynamical Response of Passive and Active Particles to Time-Periodic Mechanical Forcing*" Journal of Statistical Physics, **175**, n. 3-4, p. 640 – 683, 2019; arXiv: 1810.00964

254. Alexander Y. Grosberg, Jean-François Joanny "*Dissipation in a System Driven by Two Different Thermostats*," Polymer Science C, v. **60**, p. S118-S121, 2018.

253. Angus McMullen, Miranda Holmes-Cerfon, Francesco Sciortino, Alexander Y. Grosberg, and Jasna Brujic "*Freely-jointed polymers made of droplets*," Phys. Rev. Letters, **121**, n. 13, 138002, 2018

252. Alexander Y. Grosberg, and Robijn Bruinsma "*Confining Annealed Branched Polymers inside Spherical Capsids*", Journal of Biological Physics, v. **44**, n. 2, p. 133-145, 2018.

251. A.Y.Grosberg "*Ilya Mikhailovich Lifshitz (toward 100th anniversary)*," Uspekhi Fizicheskih Nauk, v. **188**, n. 1, p. 89-94, 2018.

250. Cato Sandford, and Alexander Y. Grosberg "*Memory effects in active particles with exponentially correlated propulsion*", Physical Review E, v. **97**, n. 1, 012602, 2018.

249. Alexander Y.Grosberg, Bertrand Halperin, and John Singleton "*In celebratioon of Ilya Lifshitz*", Physics Today, n. 11 (November), p. 44-50, 2017.

248. Cato Sandford, Alexander Y. Grosberg, and Jean-François Joanny "*Pressure and Flow of Exponentially Self-Correlated Active Particles*", Physical Review E, v. **96**, n. 11, 052605, 2017.

247. Ralf Everaers, Alexander Y. Grosberg, Michael Rubinstein, Angelo Rosa "*Flory theory of randomly branched polymers*", Soft Matter, v. **13**, p. 1223-1234, 2017.

246. Alexander Y. Grosberg, Joshua Kelly, and Robijn Bruinsma "*The Confinement of an Annealed Branched Polymer by a Potential Well*" Low Temperature Physics, v. **43**, n. 1, p. 122-131, 2017.

245. Alexander Y. Grosberg "*Vingt ans après (Twenty years after).* Comment on "Disentangling DNA Molecules" by Alexander Vologodskii" Physics of Life Reviews, v. **18**, p. 139-143, 2016.

244. Alexander Y. Grosberg "*Do knots self-tighten for entropic reasons?*," Vysokomolekulyarnye Soedineniya, Ser. A, v. **58**, n. 6, pp. 560 – 568, 2016; **English translation:** Polymer Science Ser. A (Moscow), v. **58**, n. 6, pp. 864-872, 2016.

243. Calin Plesa, Daniel Verschueren, Sergii Pud, Jaco van der Torre, Justus W. Ruitenberg, Menno J. Witteveen, Magnus P. Jonsson, Alexander Y. Grosberg, Yitzhak Rabin, and Cees Dekker "*Direct observation of DNA knots using solid state nanopore*" Nature Nanotechnology, v. **11**, p. 1093 - 1097, 2016.

242. Alexander Y. Grosberg "*Ensemble view of RNAs and proteins: loops, knots, territories, and evolution*," Biophysical Journal (News & Notable)), v. **110**, n. 11, p. 2289-2290, 2016.

241. Jan Smrek, and Alexander Y. Grosberg "*Minimal surfaces on unconcatenated polymer rings in melt*," ACS Macro Letters, v. **5**, p. 750-754, 2016.

240. Alexander Y. Grosberg "*Extruding loops to make loopy globule?*," Biophysical Journal (News & Notable), v. **110**, n. 10, p. 2133-2135, 2016.

239. Alexander Y. Grosberg, Jean-François Joanny, Watee Srinin, and Yitzhak Rabin "*Scale-dependent viscosity in polymer fluids*," Journal of Physical Chemistry B v. **120**, n. 26, p. 6383-6390, 2016.

238. Joshua Kelly, Alexander Y. Grosberg, Robijn Bruinsma "*Sequence dependence of viral RNA encapsidation*," Journal of Physical Chemistry B v. **120**, n. 26, p. 6038-6050, 2016.

237. Robijn F. Bruinsma, Mauricio Comas-Garcia, Rees F. Garmann, Alexander Y. Grosberg "*Quasi-equilibrium self-assembly of small RNA viruses*," Physical Review E v. **93**, n. 3, 032405, 2016.

236. Alexander Y. Grosberg, and Jean-François Joanny "*Nonequilibrium statistical mechanics of mixtures of particles in contact with different thermostats*" PRE v. **92**, n. 3, 032118, 2015.

235. Alexander Y. Grosberg, and Sergei K. Nechaev "*From statistics of regular tree-like graphs to distribution function and gyration radius of branched polymers*", Journal of Physics A: Math. & Theor., v. **48**, 345003, 2015.

234. Jan Smrek, and Alexander Y. Grosberg "*Facilitated diffusion of proteins through crumpled fractal DNA globule*" PRE v. **92**, n. 1, 012702, 2015.

233. Henrique W. Moyses, Ross O. Bauer, Alexander Y. Grosberg, and David G.Grier "*A perturbative theory for Brownian vortexes*" PRE v. **91**, n. 6, 062144, 2015.

232. Jérémie Palacci, Stefano Sacanna, Anais Abramian, Jeremie Barral, Kasey Hanson, Alexander Y. Grosberg, David J. Pine, Paul M. Chaikin "*Artificial Rheotaxis*," Science Advances, v. **1**, e1400214, 2015.

231. Jason Cantarella, Alexander Y. Grosberg, Robert Kusner, and Clayton Shonkwiler "*The Expected Total Curvature of Random Polygons*", American Journal of Mathematics, v. **137**, n. 2, pages 411-438, 2015.

230. Jan Smrek, and Alexander Y. Grosberg "*On enumeration of Hilbert-like curves*," Journal of Physics A: Mathematical and Theoretical, v. **48**, 195001, 2015.

229. Jan Smrek, and Alexander Y.Grosberg "Understanding the dynamics of rings in the melt in terms of the annealed tree model," Journal of Physics: Condensed Matter, v. **27**, n. 6, 064117, 2015.

228. Alexander Y.Grosberg "*The tyranny of correspondence principle: Comment on "Fluctuations in the DNA double helix: A critical review" by Maxim D.Frank-Kamenetskii and Shikha Prakash*", Physics of Life Reviews, v. **11**, n. 2, p. 178-180, 2014.

227. Robijn Bruinsma, Alexander Y.Grosberg, Yitzhak Rabin, and Alexandra Zidovska "*Chromatin Hydrodynamics*," Biophysical Journal, v. **106**, n. 9, p. 1871-1881, 2014.

226. Shlomi Medalion, Michal Wagman, Alexander Y. Grosberg and Yitzhak Rabin "*Network formation by cross-hybridization of complementary strands to grafted ssDNA*," Macro Letters, v. **3**, p. 191-193, 2014.

225. Jonathan D. Halverson, Jan Smrek, Kurt Kremer, and Alexander Y.Grosberg "*From a melt of rings to chromosome territories: the role of topological constraints in genome folding*," Reports on Progress in Physics, v. **77**, 022601 (24 pages), 2014.

224. Alexander Y. Grosberg "*Annealed lattice animal model and Flory theory for the melt of non-concatenated rings: Towards the physics of crumpling*" Soft Matter, v. **10**, n. 4, p. 560-565, 2014.

223. Ludvig Lizana, and Alexander Y. Grosberg "*Exact expressions for the mobility and electrophoretic mobility of a weakly charged sphere in a simple electrolyte*," Europhysics Letters, v. **104**, 68004 (6 pages), 2013. arXiv:1305.4060

222. Jonathan D.Halverson, Won Bo Lee, Gary S.Grest, Alexander Y.Grosberg, Kurt Kremer "*Reply to Comment on "Molecular dynamics simulation study of nonconcatenated ring polymers in a melt. I. Statics" [J. Chem. Phys. 134, 204904 (2011)]*," Journal of Chemical Physics, v. **139**, 217102, 2013.

221. Jan Smrek and Alexander Y.Grosberg "*A novel family of space-filling curves in their relation to chromosome conformation in eukaryotes*," Physica A: Statistical Mechanics and its Applications, v. **392**, n. 24, pp. 6375 - 6388, 2013.

220. Kun-Ta Wu, Lang Feng, Ruojie Sha, Rémi Dreyfus, Alexander Y. Grosberg, Nadrian C. Seeman, and Paul M. Chaikin "*Kinetics of DNA-Coated Sticky Particles*," Phys. Rev. E v. **88**, 022304, 8 pages, 2013.

219. Payam Rowghanian and Alexander Y. Grosberg "*Two Cases of Reciprocal Relations for Electric and Hydrodynamic Currents: a Rigid Polymer in a Nano-Channel and a Polyelectrolyte Gel*," Journal of Chemical Physics, v. **139**, 024902, 6 pages, 2013.

218. Payam Rowghanian and Alexander Y. Grosberg "*Electrophoretic capture of a DNA chain into a nanopore*," Physical Review E, v. **87**, n. 4, 042722, 2013.

217. Payam Rowghanian and Alexander Y. Grosberg "*Electrophoresis of a DNA coil near a nanopore*," Physical Review E, v. **87**, n. 4, 042723, 2013.

216. Calin Plesa, Stefan Kowalczyk, Ruben Zinsmeester, Alexander Y.Grosberg, Yitzhak Rabin, Cees Dekker "*Fast Translocation of Proteins through Solid State Nanopores*," Nano Letters, v. **13**, no. 2, pp. 658 – 663, 2013.

215. Jonathan D. Halverson, Kurt Kremer, and Alexander Y. Grosberg "*Comparing the results of lattice and off-lattice simulations for the melt of nonconcatenated rings*," Journal of Physics A: Mathematical & Theoretical, v. **46**, 065002, 2013.

214. Kun-Ta Wu, Lang Feng, Ruojie Sha, Rémi Dreyfus, Alexander Y. Grosberg, Nadrian C. Seeman, and Paul M. Chaikin "*Polygamous particles*," PNAS, v. **109**, no. 46, pp. 18731-18736, 2012.

213. Alexander Y. Grosberg "*How two meters of DNA fit into a cell nucleus: polymer models with topological constraints and experimental data*," Vysokomolekulyarnye Soedineniya, Ser. C, v. **54**, n. 7, pp. 963 – 974, 2012; **English translation:** Polymer Science Ser. C (Moscow), v. **54**, n. 1, pp. 1–10, 2012.

212. Payam Rowghanian, and Alexander Y. Grosberg "*Propagation of tension along a polymer chain*," Physical Review E, v. **86**, 011803, 8 pages, 2012.

211. Alexander Y.Grosberg, and Yitzhak Rabin "*What about a theory? Comment on "Nanopores: A journey towards DNA sequencing" by Meni Wanunu*," Physics of Life Reviews, v. **9**, n. 3, pages 172-173, 2012.

210. Jonathan Halverson, Gary S.Grest, Alexander Y.Grosberg and Kurt Kremer "*Rheology of ring polymer melts: From linear contaminants to ring/linear blends*," Physical Review Letters, v. **108**, 038301, 2012.

209. Yuichi Wakamoto, Alexander Y.Grosberg, Edo Kussell "*Optimal Lineage Principle for Age-Structured Populations*," Evolution, v. **66**, n. 1, pp. 115 – 134, 2012.

208. Payam Rowghanian, Alexander Y. Grosberg "*Force driven polymer translocation through a nanopore: an old problem revisited*," Journal of Physical Chemistry B, v. **115**, n. 48, p. 14127-14135, 2011.

207. Alexander Y.Grosberg "*Crumpled Globule Model of DNA Packing in Chromosomes: from Predictions to Open Questions*," BIOMAT 2010, International symposium on Mathematical and Computational Biology, Rio de Janeiro, Brazil, 24-29 July 2010, edited by Rubem P.Mondaini, pages 17-28, 2011.

206. Alexander Y.Grosberg "*Energy conservation versus conservation of energy: Comment on "The theory of bio-energy transport in the protein molecules and its properties" by Xiao-Feng Pang*," Physics of Life Reviews, v. **8**, n. 3, pages 293-295, 2011.

205. Stefan W.Kowalczyk, Alexander Y.Grosberg, Yitzhak Rabin, and Cees Dekker "*Modeling the conductance and DNA blockade of solid-state nanopores*," Nanotechnology, v. **22**, n. 31, 315101, 2011.

204. Jonathan D.Halverson, Won Bo Lee, Gary S.Grest, Alexander Y.Grosberg, Kurt Kremer "*Molecular dynamics simulation study of nonconcatenated rings in a melt. I. Statics*," Journal of Chemical Physics, v. **134**, 204904, 2011 [13 pages].

203. Jonathan D.Halverson, Won Bo Lee, Gary S.Grest, Alexander Y.Grosberg, Kurt Kremer "*Molecular dynamics simulation study of nonconcatenated rings in a melt. II. Dynamics*," Journal of Chemical Physics, v. **134**, 204905, 2011 [10 pages].

202. Alexander Y.Grosberg, Yitzhak Rabin "*DNA capture into a nanopore: interplay of diffusion and electrohydrodynamics*," Journal of Chemical Physics, v. **133**, 165102, 2010 [15 pages].

201. Bo Sun, David G. Grier, and Alexander Y. Grosberg "*Minimal Model for Brownian Vortexes*," Phys. Rev. E, v. **82**, 021123 (2010) [6 pages].

200. Meni Wanunu, Will Morrison, Yitzhak Rabin, Alexander Y. Grosberg, Amit Meller "*Electrostatic focusing of unlabeled DNA into nanoscale pores using a salt gradient*," Nature Nanotechnology, v. **5**, p. 160-165, 2010; Published online: 20 December 2009, doi:10.1038/nnano.2009.379.

199. Longhua Hu, Alexander Y. Grosberg, and Robijn Bruinsma "*First passage time distribution for the 1D diffusion of particles with internal degrees of freedom*," Journal of Physics A: Math. Theor. v. **42**, 434011, 2009 [26 pages].

198. Bo Sun, Jiayi Lin, Ellis Darby, Alexander Y.Grosberg, David G. Grier "*Brownian vertexes,*" Phys. Rev. E, v. **80**, 010401, 2009 [4 pages].

197. Quan Wen, Armen Stepanyants, Guy N. Elston, Alexander Y. Grosberg, and Dmitri B. Chklovskii "*Maximization of the connectivity repertoire as a statistical principle governing the shapes of dendritic arbors*," PNAS, v. **106**, July 28, p. 12536-12541, 2009.

196. Thomas Vettorel, Alexander Y.Grosberg, and Kurt Kremer "*Territorial Polymers*," Physics Today, v. **62**, n. 8, p. 72, 2009.

195. Thomas Vettorel, Alexander Y.Grosberg, and Kurt Kremer "*Statistics of polymer rings in the melt: A numerical simulation study*," Physical Biology, v. **6**, n. 2, 025013, 2009.

194. A.Y. Grosberg "*A few notes about polymer knots*," Vysokomolekulyarnye Soedineniya, Ser. A, v. **51**, n. 1, pp. 70-79, 2009; **English translation:** Polymer Science Ser. A (Moscow), v. **51**, n. 1, pp. 94-105, 2009.

193. Longhua Hu, Alexander Y. Grosberg, and Robijn Bruinsma "*Are DNA Transcription Factor Proteins Maxwellian Demons?*," Biophysical Journal, **95**, n. 3, p. 1151-1156, 2008 (ArXiv:0709.1495).

192. Alexander Y. Grosberg "*Total curvature and total torsion of a freely jointed circular polymer with $n \gg 1$ segments*," Macromolecules, v. **41**, n. 12, p. 4524-4527, 2008.

191. S. Bhattacharya, A. Milchev, V.G. Rostiashvili, A.Y. Grosberg, T.A. Vilgis "*Adsorption Kinetics of a Single Polymer on a Solid Plane*," Physical Review E, v. **77**, 061603, 12 pages, 2008.

190. Alexander Y. Grosberg and Yitzhak Rabin "*Metastable tight knots in a worm-like polymer*," Physical Review Letters, v. **99**, 217801, 2007. (cond-mat/0702160)

189. Carmen Alvarez-Lorenzo, Jeffrey Chuang, Angel Concheiro, Alexander Y. Grosberg "*Imprinting Using Smart Polymers*," Chapter 7 in: "Smart Polymers, Applications in Biotechnology and Biomedicine," edited by Igor Galaev and Bo Mattiasson, CRC Press, Boca Raton-London-New York, 2007, p. 211-246.

188. Longhua Hu, Alexander Y. Grosberg "*Heteropolymer Sequence Design and Preferential Solvation of Hydrophilic Monomers: One More Application of Random Energy Model*," Physical Review E, v. **75**, n. 4, 041921 (14 pages), 2007.

187. Edo Kussell, Stanislas Leibler, and Alexander Grosberg "*Polymer-population mapping and localization in the space of phenotypes*," Phys. Rev. Lett. v. **97**, 068101, 2006.

186. S.Rapaport, Y.Rabin, A.Y.Grosberg "*Worm-Like Polymer Loops and Fourier Knots*," J. Phys. A: Math. & Gen. v. **39**, p. L507-L513, 2006. (cond-mat/0510805)

185. N.T.Moore, A.Y.Grosberg "*Abundance of trivial knots in various polymer chain models*," J. Phys. A: Math. & Gen. v. **39**, p. 9081-9092, 2006. (cond-mat/0604225)

184. A.Y.Grosberg, S.Nechaev, M.Tamm, O. Vasilyev "*How long does it take to pull an ideal polymer into a small hole?*," Physical Review Letters, v. **96**, 228105, 2006. (cond-mat/0510418).

183. Rhonald C. Lua, Alexander Y. Grosberg "*Statistics of Knots, Geometry of Conformations, and Evolution of Proteins*," PLoS Computational Biology, v. **2**, n. 5, e45 (8 pages), 2006.

182. Tao Hu, A.Y.Grosberg, B.I.Shklovskii "*The suspension of nanowires in a weakly conducting medium*," Physical Review B, v. **73**, n. 5, 155434, 2006 (cond-mat/0602154).

181. Tao Hu, A.Y.Grosberg, B.I.Shklovskii "*How proteins search for their specific sites on DNA: the role of DNA conformation*," Biophysical Journal, v. **90**, n. 4, p. 2731-2744, 2006. (q-bio.BM/0510043).

180. Alexander Y.Grosberg, Alexei R.Khokhlov "*After-action of the ideas of I.M.Lifshitz in polymer and biopolymer physics*," Advances in Polymer Science, v. **196**, p. 189-210, 2006.

179. Rhonald C. Lua, Alexander Y. Grosberg "*First passage times and asymmetry of DNA translocation*," Physical Review E, v. **72**, n. 6, 061918 (8 pages), 2005. (q-bio.BM/0508010).

178. N.T. Moore, A.Y. Grosberg "*Limits of Analogy Between Self-Avoidance and Topology-Driven Swelling of Polymer Loops*," Physical Review E v. **72**, n. 6, 061803 (10 pages), 2005. cond-mat/0506786

177. Rhonald C. Lua, Nathan T. Moore, Alexander Y. Grosberg "*Under-Knotted and Over-Knotted Polymers: 2. Compact self-avoiding loops*," In: Physical and Numerical Models in Knot Theory, Including Applications to the Life Sciences, Series on Knots and Everything, vol. 36, J.A.Calvo, K.C.Millet, E.J.Rawdon, A.Stasiak (Editors), World Scientific, 2005, p. 385-398.

176. Nathan T. Moore, Rhonald C. Lua, Alexander Y. Grosberg "*Under-knotted and over-knotted polymers: 1. Unrestricted loops*," In: Physical and Numerical Models in Knot Theory, Including Applications to the Life Sciences, Series on Knots and Everything, vol. 36, J.A.Calvo, K.C.Millet, E.J.Rawdon, A.Stasiak (Editors), World Scientific, 2005, p. 363-384.

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