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44. Strengthening of Polycrystalline Solid Undergoing Local Phase Transitions. **Sov. Tech. Phys. Lett.** 10 (17) 1069-1073 (1984) *with S. N. Zelenin and V. I. Rafalovich*
45. Criterion of Superionic Conduction. **Sov. Phys. Solid State** 25 (10) 1673-1675 (1983) *with S. N. Zelenin.*

29. Nucleation at Twin Boundaries in Crystals Undergoing Phase Transitions Near Singularities in Phase Diagrams. Direct Observation of Nuclei of Low-Symmetry Phases in NaNbO_3 . **Sov. Phys. JETP** 71 (3) 619-625 (1990) with *V. P. Dmitriev, O. A. Zhelnova and P. E. Pumpyan*
30. Local Phase Transition at a Moving Dislocation. **Sov. Phys. Crystallogr.** 35 (2) 156-158 (1990) with *P. E. Pumpyan*
31. Nucleation on Domain Walls Near Singular Phase Diagram Points. **Ferroelectrics** 111 pt. B, 111-115 (1990) with *P. E. Pumpyan*
32. Phase Transitions in Domain Walls. **Ferroelectrics** 98 277-290 (1989) with *Yu. M. Gufan*
- A. Boulbitch. List of publications
33. Influence of Hydrogen Dissolved in Metal Rod to its Stability and Overcritical Regime. In the book "**Numerical and Analytical Methods in Problems of Mechanics and Elastic Theory.**" Ed. Rostov Inst. of Civil Engineers, Rostov-on-Don 1989, p.53-55. (in Russian) with *K. A. Emma*
34. Inevitable Symmetry Lowering in a Domain Wall Near a Reordering Phase Transition. **Sov. Phys. JETP** 67 (6) 1153-1157 (1988) with *Yu. M. Gufan*
35. Classification of Phases in Orientational Ordering in an Isotropic Medium, Induced by Tensor Parameters of Rank 2,3,4. **Sov. Phys. Crystallogr.** 33 (5) 629-633 (1988)
36. Hardening of Solid Due to Local Phase Transition at the End of a Crack. **Sov. Phys. Tech. Phys.** 58 (1) 19-23 (1988)
37. Local Phase Transition in the Cavity Vicinity in Solid. **Sov. Phys. Tech. Phys. Lett.** 56 (8) 1524-1529 (1986) with *S. N. Zelenin, V. I. Rafalovich,*
38. Plane Defects in Crystals Undergoing Structural Phase Transition. Ph.D. Thesis, Rostov-on-Don, 1988. (in Russian)
39. Plane Defects in Crystals Undergoing Structural Phase Transition. Extended Summary of the Ph.D Thesis. Rostov-on-Don, 1987 (in Russian)
40. Criterion of Cracks Nucleation at Inclusions Undergoing Phase Transitions. In the book "**Calculations on Plates and Shells.**" Ed. Rostov Inst. of Civil Engineers, Rostov-on-Don 1986, p.159-167. (in Russian) with *S. N. Zelenin, S. V. Mironov*
41. Doubled plateau in diagrams of solubility of hydrogen in metals. **Phizika i Tehnika Visokih Davlenii** 22 43-45 (1986) (Physics and Technics of a High Pressure - in Russian) with *Yu. P. Krasheninina, V. I. Snezhkov*
42. Flat Defects and Dislocations in the Low-Symmetry Crystal Phase. **Metallofizika** 9 (4) 88-92 (1987) (Physics of Metals - in Russian)

15. Local measurements of viscoelastic parameters of adherent cell surfaces by magnetic bead microrheometry.
Biophys. J. 75 2038-2049 (1998) with *A. R. Bausch, F. Ziemann, K. Jacobson and E. Sackmann*
16. Phase nucleation on elastic defects in crystals undergoing a phase transition. **Phys. Rev. Lett.** 81 (4) 838-841
A. Boulbitch. List of publications
17. Load-dependent electronic states at the crack tip in a semiconductor. **Phys. Lett. A** 243 345-350 (1998) with *A. V. Fisenko*
18. Temperature-concentration phase diagrams of antiferroelectric liquid crystal mixtures. **Phys. Lett. A** 237 271-275 (1998) with *P. Tolédano*
19. Deflection of a cell membrane under application of a local force. **Phys. Rev. E** 57 (2) 2123-2128 (1998)
20. Crystallization of proteins accompanied by formation of a cylindrical surface. *Phys. Rev. E* **56** (3) 3395-3400 (1997)
21. A Secondary School With an Advanced Training in Arts and Art-and-Crafts: an experiment of the secondary school # 35 on the background of a regional specificity and a state of the Russian education system. Preprint (Ed by the Dept. of Education, Rostov-on-Don, Russia) p. 1-34, 1996 (in Russian) with *L. N. Tschetschel and S. L. Levina,*
22. The Orientational Mechanism of the Phase Transitions in Ferrielectric Liquid Crystals. **Phys. Rev. E** 49 (2) 1367-1374 (1994) with *V. Lorman and P. Tolédano*
23. Interaction of a Phase Front and a Defect. **J. Phys.: Condensed Matter** 5 4149-4160 (1993) with *L. Balyunis and O. Zhelnova*
24. New Phase Nucleus Appearance on a Twin Boundary, which is Moving With an Invariable Velocity or Oscillating. **J. Phys. I (France)** 3 1175-1186 (1993) with *P. E. Pumpyan*
25. Effect of Dissolved Hydrogen on the Ductile Properties of Metals as a Result of Nucleation on Dislocations. **J. Alloys and Compounds** 196 29-36 (1993)
26. Flat Elasticity Theory Application for the Description of Stressed State and Fracture of Solids Under Phase Transitions. **J. Mater. Sci.** 27 6401-6410 (1992)
27. Nucleation on a moving twin boundary. **Ferroelectrics** 124, N 1-4, 11-16 (1991) with *P. E. Pumpyan*
28. Nucleation on the Crack Tip and Transformation Toughness in Crystals Undergoing Structural Phase Transitions. **J. Mater. Sci.** 27 N 4 1070-1080 (1991)

A. Boulbitch
LIST OF PUBLICATIONS

1. Adhesion Mediated by Competition of Ligand-Receptor Binding Against the Lateral Osmotic Pressure of Mobile Repellers
<http://xxx.lanl.gov/ftp/cond-mat/papers/0408/0408535.pdf>
2. Enforced unbinding of biomembranes whose mutual adhesion is mediated by specific interaction. **Eur. Biophys. J. Lett.** 31 (8) 637-642 (2003)
3. Enforced unbinding of a bead adhered to a biomembrane by generic forces. **Europhys. Lett.** 59 (6) 910-915 (2002)
4. Kinetics of membrane adhesion mediated by ligand-receptor interaction studied with a biomimetic system. **Biophys. J.** 81 2743-51 (2001) *with Z. Guttenberg, and E. Sackmann*
5. First-order transition between adhesion states in a system mimicking cell-tissue interactions. **Europhys. Lett.** 54 (6) 826-832 (2001) *with Z. Guttenberg, B. Lorz, and E. Sackmann*
6. Elasticity of Rod-Shaped Gram-Negative Eubacteria. **Phys. Rev. Lett.** 85 (24) 5246-5249 (2000) *with B. Quinn and D. Pink*
7. Deformation of the envelope of a spherical Gram-negative bacterium during the atomic force microscopic measurements. **Journal of Electron Microscopy** 49 (3) 459-462 (2000)
8. Bacterial Turgor Pressure Can be Measured by Atomic Force Microscopy. **Phys. Rev. E** 62 (1) 1034-1044 (2000) *with M. Arnoldi, M. Fritz, E. Bäuerlein, M. Radmacher, E. Sackmann*
9. Shape Instability of a Biomembrane Driven by a Local Softening of the Underlying Actin Cortex. **Phys. Rev. E** 62 (3) 3974-3985 (2000) *with R. Simson, D. Simson, R. Merkel, W. Häckl, M. Bärmann and E. Sackmann*
10. A micromechanic study of cell polarity and plasma membrane cell body coupling in dictyostelium. **Biophys J.** 79(2) 707-19 (2000) *with R. Merkel, R. Simson, D. A. Simson, M. Hohenadl, E. Wallraff, and E. Sackmann*
11. Symmetries and induced effects in bilayer and multilayer antiferroelectric and ferroelectric liquid crystal phases, **Phys. Rev. E**, 59, (6) 6785-97 (1999) *with Toledano, P., Figueiredo Neto, A. M., and Roy, A.*
12. Equations of heterophase equilibrium of a biomembrane. **Archive of Applied Mechanics** 69 83-89 (1999)
13. Strain of a biomembrane caused by a local tangential force: application to magnetic tweezers measurements. **Phys. Rev. E** 59, (3) 3402-3407 (1999)
14. Induced ferroelectricity in antiferroelectric liquid crystals. **Eur. Phys. J. B** 6, 355-362 (1998) *with P. Tolédano.*

CURRICULUM VITAE

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EDUCATIONAL BACKGROUND

- 2001 Habilitation in Theoretical Biophysics with Prof. E. Sackmann (Technical University Munich)
Habilitation thesis “**Applied Theoretical Micromechanics: Bacterial Cell Wall and Composite Membrane**“
- 1988 PhD thesis: "Plane defects in crystals undergoing structural phase transitions", Rostov University, Russia
- 1975-1980 BSc and MSc studies in physics at the Physics Department of Rostov University, Russia.
1980 MSc (Diploma) Thesis “**Renormalization-group theory in the vicinity of a tri-critical point**” with distinction

APPOINTMENTS

- 1998-present **Senior Researcher** (BAT 1b) at the Dept. for Biophysics E22, Technical University Munich, Germany
- 1996-1998 **Humboldt fellow** at the Dept. for Biophysics E22, Technical University Munich, Germany
- 1995-1996 **Dozent**, Department of Biophysics, Rostov University, Rostov-on-Don, Russia
- 1993-1995 **Senior Researcher** at the Institute of Physics of Rostov University, Rostov-on-Don, Russia
- 1991-1993 **Visiting scientist** at the Laboratory of Phase Transitions, University of Picardie, Amiens, France
- 1980-1991 **Researcher** at the Institute of Physics of Rostov University, Rostov-on-Don, Russia

AWARDS

- 1996-1998 Alexander von Humboldt Fellowship (Alexander von Humboldt Foundation, Bonn, Germany)
- 1978 & 1979 First Prize for the best contribution at Russian National Students Scientific Conference, Russia
- 1979 First Prize for the best student’s scientific contribution from the Dept. for Physics, Rostov University

PUBLICATIONS

45 papers (see the List of Publications pages 2-4)

TEACHING EXPERIENCE

7 courses

COLLABORATIONS:

Membership in the Theory Group of the Foods and Bio-Materials Network (Canada)