

Nizami Z. Vagidov, Ph. D.

CURRICULUM VITA

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RESEARCH INTERESTS:

Microelectronic devices and materials; Terahertz generators: theory, simulation, and applications; Transport in heterostructures, thin films, quantum wells, and quantum wires; Nanoelectronics and nanoengineering; Theory and computational methods of device simulation; Monte Carlo methods of simulation; Resonance-tunneling diodes; Simulation of thyristors and devices based on quantum wells and quantum wires.

EDUCATION:

Ph.D., Electrical Engineering.

Dissertation: "Computer simulation of nonconventional nanoscale semiconductor devices". 2001 5050 Anthony Wayne Drive, Department of ECE, Wayne State University, Detroit, MI 48202

Ph.D., Solid-State Physics.

(Candidate of Sciences in Physics and Mathematics).

Dissertation: "Parallel transport of hot electrons in heterostructures with their real space transfer". 1996

Department of Theoretical Physics, Lashkaryov Institute of Semiconductor Physics, 45 Prospect Nauki, Kiev 03028, Ukraine

M.S., Solid-State Physics.

Thesis: "Induced radiation processes in periodical electric and magnetic fields". 1976

Department of Physics, Daghestan State University, Daghestan, Makhachkala 367012, Russia.

B.S., Physics.

1974 Department of Physics, Daghestan State University, Daghestan, Makhachkala 367012, Russia.

EMPLOYMENT:

University at Buffalo, The State University of New York, Department of Electrical Engineering, Buffalo, NY 14260

2003 - present

Assistant Professor Research

Responsibilities include research in theory and computer simulations of

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| <i>Wayne State University</i> , Department of Electrical and Computer Engineering, Detroit, MI 48202 | 1997 - 2003 | nanoscale semiconductor devices. Supervised work of three graduate and one undergraduate student. |
| <i>Lashkaryov's Institute of Semiconductor Physics of Ukrainian Academy of Sciences</i> , Laboratory of Semiconductors and Semiconductor Devices, Kiev 03028, Ukraine | 1991 - 1997 | Research Associate Conducted research on electron-phonon interaction in semiconductors and semiconductor structures, developed theory and carried out numerical simulations of novel terahertz generators. Research Scientist Conducted theoretical and numerical studies of ballistic quasineutral semiconductor plasma with negative-effective-mass carriers. Investigated ballistic transport in semiconductor waveguides and resonant-tunneling double-barrier structures. Studied and simulated real-space transfer of two-dimensional electrons in semiconductor heterostructures. |
| <i>Daghestan Scientific Center of Russian Academy of Sciences, Institute of Physics</i> , Laboratory of Semiconductor Physics, Daghestan, Makhachkala 367024, Russia | 1980 - 1991 | Supervised work of one graduate student. Junior Research Scientist Conducted theoretical research of ambipolar drift instabilities in multilayered semiconductor structures, conducted experimental and theoretical research of transport in group IV semiconductors (Si and Ge) under ultra-high temperature gradient. |
| <i>Novokuli High School</i> , Daghestan, Russia | 1976 - 1980 | Teacher of Physics and Astronomy |

GRANTS AND AWARDS:

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|---|-------------|-----------|--|
| Thomas C. Rumble Fellowship established for outstanding doctorate candidates. Senior Investigator | 1999 - 2000 | \$ 30,000 | Wayne State University, Detroit, MI 48202 |
| National Science Foundation Grant ECS 0099913 "Terahertz microwave generation in dc-biased heterostructural ballistic devices". | 2001 - 2004 | \$270,000 | Wayne State University, Detroit, MI 48202 |
| National Science Foundation Grant EEC 0407246 "NUE: Introduction to Nano-electronics". | 2004 - 2006 | \$100,000 | The State University of New York, University at Buffalo, Buffalo, NY 14260 |
| ACS Petroleum Research Fund Grant ACS PRF # 41317-AC10 "Theory and modeling of complex two-dimensional structures fabricated with the aid of bacterial S-layer protein masks". | 2004 - 2006 | \$80,000 | The State University of New York, University at Buffalo, Buffalo, NY 14260 |
| National Science Foundation Grant ECS | 1996 - 2000 | \$305,470 | Wayne State University, |

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|---|--------------|----------------------------|---|
| 9523729 “Gate control of light emitting and lasing thyristors”. | | | Detroit, MI 48202 |
| National Science Foundation Grant ECS 9526112 “Terahertz microwave generators from submicron $n^+ - n - n^+$ diodes”. | 1996 - 2000 | \$ 75,000 | Wayne State University, Detroit, MI 48202 |
| National Science Foundation Grant ECS 9813823 “Terahertz microwave generators. Hetero- structure ballistic negative effective mass generator for THz range”. | 1999 - 2000 | \$60,000 | Wayne State University, Detroit, MI 48202 |
| Army Research Office Grant DAAG55-97-1-0012 “Phonon kinetics and heat removal from low-dimensional semiconductor structures”. | 1997 - 2000 | \$180,000 | Wayne State University, Detroit, MI 48202 |
| Jet Propulsion Laboratory (NASA) Grant, Task 904 “Quantum well ballistic devices for generation of terahertz radiation”. | 1999 - 2000 | \$25,000 | Wayne State University, Detroit, MI 48202 |
| Summer 2001 Dissertation Fellowship | Summer 2001 | \$10,000 | Wayne State University, Detroit, MI 48202 |
| Science and Technology Center of Ukraine, Grant Taran’-UA 7/12 “Study of electron parallel transport in high electric fields in pseudomorphic A_3B_5 heterostructures and possibility of fabrication of high-frequency field-effect transistors on their basis”. | 1991 - 1992 | \$4,000 | Department of Theoretical Physics, Lashkaryov Institute of Semiconductor Physics, 45 Prospect Nauki, Kiev 03028, Ukraine. |
| Science and Technology Center of Ukraine, Grant Para 2/454 “Theoretical study of resonant-tunneling effects in two-dimensional semiconductor structures”. | 1992 - 1993 | \$4,000 | Department of Theoretical Physics, Lashkaryov Institute of Semiconductor Physics, 45 Prospect Nauki, Kiev 03028, Ukraine. |
| Lashkaryov Award | 1995 1989 | First Prize First Prize | Department of Theoretical Physics, Lashkaryov Institute of Semiconductor Physics, 45 Prospect Nauki, Kiev 03028, Ukraine. |
| Patent of a new type of current rectifier "Semiconductor rectifier" (co-inventors X. I. Amirkhanov, R. I. Bashirov, and R. R. Bashirov) | 1982 | Patent SU 1003697 | Daghestan Scientific Center of Russian Academy of Sciences, Institute of Physics, Daghestan, Makhachkala 367024, Russia |

PROFESSIONAL SOCIETIES:

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| Member of the Sigma Xi Scientific Society | since 2004 | Membership Number: 20040680007 |
| Member of the American Physical Society | since 2001 | Membership Number: 60060224 |

ACADEMIC AND ADMINISTRATIVE SERVICES:

Referee of:

- Journal of Applied Physics;
- Solid-state Electronics;
- Optics Communications;
- Ukrainian Journal of Physics;
- Semiconductor Physics, Quantum Electronics, and Optoelectronics.

Referee of: Singapore Agency for Science, Technology, and Research.

Editor of:

- Textbook: "Quantum Heterostructures: Microelectronics and Optoelectronics", V.Mitin, V. Kochelap, and M. Strosio, Cambridge University Press, 634 p. (1999);
- Monograph: "Simulation of Transport Phenomena in Semiconductors. Method Monte Carlo", V. M. Ivastchenko and V. Mitin. Naukova Dumka, Kiev, 192 p. (1990).

PRESENTATIONS AT INTERNATIONAL CONFERENCES

I took part at more than *30 International Conferences*.

The list of the conferences I participated for the last five years:

- 2005, 7th International Conference on New Phenomena in Mesoscopic Structures/ 5th International Conference on Surfaces and Interfaces of Mesoscopic Devices (NPMS7/SIMD5), November 27 - December 2, 2005, Maui, Hawaii, USA;
- 2004, International Conference on Solid State Devices and Materials (SSDM 2004), Tokyo, Japan;
- 2003, 14th International Symposium on Space THz Technology, Tucson, AZ, USA
- 2003, 4th International Symposium on Nanostructures and Mesoscopic Systems, Tempe, Arizona, USA;
- 2002, 4th International Conference on Low Dimensional Structures and Devices, Fortaleza-Ceara, Brazil;
- 2002, 26th International Conference on the Physics of Semiconductors, Edinburgh UK;
- 2002, 26th Workshop on Compound Semiconductor Devices and Integrated Circuits, Chernogolovka, Russia;
- 2002, 13th International Symposium on Space THz Technology, Cambridge, MA, USA;
- 2001, International Semiconductor Device Research Symposium, Washington, DC, USA;
- 2001, 16th International Conference on Noise in Physical Systems and 1/f Fluctuations, Gainesville, Florida, USA;
- 2000, 24th Workshop on Compound Semiconductor Devices and Integrated Circuits, Aegean Sea, Greece;
- 2000, 11th International Symposium on Space Terahertz Technology, Ann-Arbor, MI, USA.

PROFESSIONAL PUBLICATIONS:

I have more than 70 technical publications; 45 of them are refereed publications. My papers were published in refereed journals, including the most prestigious ones in the field (*Physical Review B*, *Applied Physics Letters*, *Journal of Applied Physics*, *Solid-State Electronics*, *Superlattices and Microstructures*, and *JETP Letters*). According to ISI Citation Database, the results of my research have been referenced in over *100 citations*.

Representative publications:

- Atomistic Approach for Nano-Scale Devices at the Scaling Limit and Beyond - Valley Splitting in Si, *Japanese Journal of Applied Physics*, v. 44, No. 4B, pp. 2187-2190 (2005) (with A. Rahman, G. Klimeck, M. Lundstrom, and T.B. Boykin).

- Phenomenological Theory of Tunnel Emitter Transit Time Oscillators for the Terahertz Range, *Journal of Applied Physics*, v. 95, No. 3, pp. 1489-1496 (2004) (with Z.S. Gribnikov and G.I. Haddad).
- Quantum Real Space Transfer in a Heterostructure Overgrown on the Cleaved Edge of a Superlattice, *Journal of Applied Physics*, v. 93, No. 1, pp. 330-340 (2003) (with Z.S. Gribnikov, R.R. Bashirov, V.V. Mitin, and G.I. Haddad).
- Electron-Acoustic Phonon Interaction in Semiconductor Nanostructures: Role of Deformation Variation of Electron Effective Mass, *Physical Review B*, v. 64, No. 23, pp. 235322 1 – 8 (2001) (with V. I. Pipa, V. V. Mitin, and M. Stroscio).
- Two Mechanisms of the Negative-Effective-Mass Instability in p-Type Quantum Well-Based Ballistic p^+pp^+ -Diodes: Simulations with a Load, *Applied Physics Letters*, v. 77, No. 23, pp. 3785-3787 (2000) (with R. R. Bashirov, Z. S. Gribnikov, and V. V. Mitin).
- Negative-Effective-Mass Ballistic Field-Effect Transistor: Theory and Modeling, *Journal of Applied Physics*, v. 87, No.10, pp. 7466-7475 (2000) (with Z. Gribnikov, A. Korshak, and V. Mitin).
- Gated Negative-Effective-Mass Ballistic Terahertz Generators, *Applied Physics Letters*, v. 75, No.15, pp. 2292-2294 (1999) (with A. N. Korshak, Z. S. Gribnikov, and V. V. Mitin).
- Terahertz Ballistic Current Oscillations for Carriers with Negative Effective Mass, *Journal of Applied Physics*, v. 80, No. 10, pp. 5799-5808 (1996) (with Z. S. Gribnikov and A. N. Korshak).
- Effect of Base Parameters on Gate-Controlled Squeeze of Current-Conducting Region in pnpn-Structures, *Solid-State Electronics*, v. 39, No. 6, pp. 915-922 (1996) (with Z. S. Gribnikov, A. N. Korshak, and V. V. Mitin).
- Terahertz-Range Oscillations of the Ballistic Current of Electrons with a Negative Effective Mass, *JETP Letters*, v. 61, No. 1, pp. 38-43 (1995) (with Z. S. Gribnikov and A. N. Korshak).
- Transport of Two-Dimensional Electrons in the Self-Consistent Quantum Well, *Ukr. Fiz. Zh.*, v. 37, No. 5, pp. 781-788 (1992) (with V. M. Ivashchenko).
- Drift Velocity of Hot Electrons in Accumulation Layers with a Nonthermal Electron Energy Distribution, *Sov. Phys. Semicond.*, v. 23, No. 2, pp. 188-192 (1989) (with Z. S. Gribnikov and V. M. Ivashchenko).

List of Refereed Publications:

46. A. Rahman, G. Klimeck, M. Lundstrom, N. Vagidov, and T.B. Boykin. *Atomistic Approach for Nano-Scale Devices at the Scaling Limit and Beyond - Valley Splitting in Si*, Japanese Journal of Applied Physics, v. 44, No. 4B, pp. 2187-2190, 2005.
45. Z.S. Gribnikov, N.Z. Vagidov, and G.I. Haddad. *Phenomenological Theory of Tunnel Emitter Transit Time Oscillators for the Terahertz Range*, J. Appl. Phys., v. 95, No. 3, pp. 1489-1496, 2004.
44. N.Z. Vagidov, J. East, V.V. Mitin, and G.I. Haddad. *THz Range Unipolar Ballistic Tunnel-Emission Transit Time Oscillators*, Proceedings of the 14th International Symposium on Space Terahertz Technology. Editors: C. Walker and J. Payne, pp. 307-317, 2004.
43. Z.S. Gribnikov, N.Z. Vagidov, and V.V. Mitin. *Negative Effective Mass Terahertz Range Oscillators on a Cleaved Edge of a Superlattice*, Journal of Comp. Electronics, v. 2, No. 1, pp. 5-20, 2003.
42. Z.S. Gribnikov, N.Z. Vagidov, V.V. Mitin, and G.I. Haddad. *Theory of Unipolar Ballistic and Quasiballistic Transit-Time Oscillators for a Terahertz Range*, Physica E, v. 19, pp. 89-94, 2003.
41. Z.S. Gribnikov, N.Z. Vagidov, V.V. Mitin, and G.I. Haddad. *Ballistic and Quasiballistic Tunnel Transit Time Oscillators for the Terahertz Range: Linear Admittance*, J. Appl. Phys., v. 93, No. 9, pp. 5435-5446, 2003.

40. Z.S. Gribnikov, **N.Z. Vagidov**, RR. Bashirov, V.V. Mitin, and G.I. Haddad. *Quantum Real Space Transfer in a Heterostructure Overgrown on the Cleaved Edge of a Superlattice*, J. Appl. Phys., v. 93, No. 1, pp. 330-340, 2003.
39. V.I. Pipa, **N.Z. Vagidov**, V.V. Mitin, and M. Stroschio. *Electron Mobility Engineering in Semiconductor Heterostructures*, Physica E, 2002, Vol. 13, pp. 54-58.
38. **N.Z. Vagidov**. *Computer Simulation of Nonconventional Nanoscale Semiconductor Devices*, Ph.D. Thesis, United States Copyright Office, Registration Number: TX 5-521-901, May 23 2002.
37. Z.S. Gribnikov, **N.Z. Vagidov**, H. Eisele, V. Mitin, and G.I. Haddad. *Heterostructure Device on the Cleaved Edge of a Superlattice for Terahertz Power Generation*, Proceedings of the 2001 International Semiconductor Device Research Symposium, pp. 559-562, 2001.
36. V. V. Mitin and **N. Z. Vagidov**. *Instabilities and Fluctuations in Semiconductor Solid-State Plasma*, Proceedings of the 16th International Conference on Noise in Physical Systems and 1/f Fluctuations. Editor: Gijs Bosman, World Scientific, pp. 293-296, 2001.
35. V. I. Pipa, **N. Z. Vagidov**, V. V. Mitin, and M. Stroschio. *Electron-Acoustic Phonon Interaction in Semiconductor Nanostructures: Role of Deformation Variation of Electron Effective Mass*, Phys. Rev. B 64 (23), pp. 235322 1 – 8, 2001.
34. R. R. Bashirov, Z. S. Gribnikov, **N. Z. Vagidov**, and V. V. Mitin. *Two Mechanisms of the Negative-Effective-Mass Instability in p-Type Quantum Well-Based Ballistic p^+pp^+ -Diodes: Simulations with a Load*, Appl. Phys. Lett., v. 77, No. 23, pp. 3785-3787, 2000.
33. Z. S. Gribnikov, **N. Z. Vagidov**, and V. V. Mitin. *Two-Stream Instability and Oscillatory Regimes Induced in Ballistic Diodes and Field-Effect Transistors*, J. Appl. Phys., v. 88, No. 11, pp. 6736-6745, 2000.
32. Z. S. Gribnikov, **N. Z. Vagidov**, and V. V. Mitin. *Two-Stream Ballistic Instability and Terahertz Oscillation Generation in n^+nn^+ -Ballistic Diodes and Field-Effect Transistor: Simulations*, Proceedings of the 11th International Symposium on Space Terahertz Technology, pp. 304-310, 2000.
31. V. I. Pipa, **N. Z. Vagidov**, V. V. Mitin, and M. Stroschio. *Energy Losses of 2D Electron Gas Due to Near-Surface Acoustic Phonon Scattering*, Superlatt. Microstruct., v. 27, No. 5-6, pp. 425-429, 2000.
30. Z. Gribnikov, **N. Vagidov**, A. Korshak, and V. Mitin. *Ballistic Field-Effect Transistor with Negative-Effective-Mass Current Carriers in the Channel*, Superlatt. Microstruct, v. 27, No. 2-3, pp. 105-109, 2000.
29. Z. Gribnikov, **N. Vagidov**, A. Korshak, and V. Mitin. *Negative-Effective-Mass Ballistic Field-Effect Transistor: Theory and Modeling*, J. Appl. Phys., v. 87, No.10, pp. 7466-7475, 2000.
28. A. N. Korshak, Z. S. Gribnikov, **N. Z. Vagidov**, and V. V. Mitin. *Gated Negative-Effective-Mass Ballistic Terahertz Generators*, Appl. Phys. Lett., v. 75, No.15, pp. 2292-2294, 1999.
27. V. I. Pipa, **N. Z. Vagidov**, V. V. Mitin, and M. Stroschio. *Momentum Relaxation of 2D Electron Gas Due to Near Surface Acoustic Phonon Scattering*, Physica B (Cond. Mat.), v. 270, No. 3-4, pp. 280-288, 1999.
26. Z. S. Gribnikov, **N. Z. Vagidov**, A. N. Korshak, and V. V. Mitin. *Ballistic Negative-Effective-Mass Field-Effect Transistor: Simulations*, Proceedings of the 1999 International Semiconductor Device Research Symposium, pp. 101-104, 1999.
25. A. N. Korshak, Z. S. Gribnikov, **N. Z. Vagidov**, S. I. Kozlovsky, and V. V. Mitin. *Effect of p^+ -Contact Parameters on Subterahertz and Terahertz Ballistic Current Oscillations for Quantized Holes With Negative Effective Masses*, Microelectronic Engineering, v. 43-44, pp. 445-451, 1998.
24. Z. S.Gribnikov, A. N. Korshak, and **N. Z. Vagidov**. *Quantum Tunnel Reflectors and Superlattices on Their Basis*, Superlatt. Microstruct., v. 23, No. 2, pp.261-264, 1998.
23. Z. S. Gribnikov, A. N. Korshak, S. I. Kozlovsky, and **N. Z. Vagidov**. *Ballistic Generators of Terahertz Current Oscillations with p-Quantum Well Bases*, Phys. Stat. Sol. (b), v. 204, No. 1, pp. 80-82, 1997.

22. A. N. Korshak, Z. S. Gribnikov, **N. Z. Vagidov**, and V. V. Mitin. *Generation of Terahertz Oscillations in p-Type Semiconductors*, Proceedings of the 1997 International Semiconductor Device Research Symposium, pp. 587-590, 1997.
21. **N. Z. Vagidov**, Z. S. Gribnikov, and A. N. Korshak. *Oscillations of a Ballistic Hole Current through Uniaxially-Compressed Semiconductor Layers*, Semiconductors, v. 31, No. 2, pp. 150-160, 1997.
20. **N. Z. Vagidov**. *Parallel Transport of Hot Electrons in Heterostructures with Their Real Space Transfer*, Thesis of Candidate of the Physics and Mathematical Sciences (field 01.04.07 – solid-state physics). Institute of Semiconductor Physics of Ukrainian National Academy of Sciences, Kiev, Ukraine, 1996.
19. Z. S. Gribnikov, A. N. Korshak, S.I. Kozlovsky, and **N. Z. Vagidov**. *Ballistic Electron Directional Coupler on the Basis of a Double Quantum Well*, Lithuanian Journal of Physics, v. 36, No. 6, pp. 599-604, 1996.
18. Z. S. Gribnikov, A. N. Korshak, **N. Z. Vagidov**, and Z. M. Alexeeva. *Terahertz Oscillation of Quantized Hole Ballistic Current at Parallel Transport across Short Modulation-Doped Heterostructural Bases*, Proceedings of the 23rd Internat.Conference on the Physics of Semiconductors, Berlin, Editors M. Scheffler and R. Zimmermann, World Scientific, v. 4, pp. 3287-3290, 1996.
17. Z. S. Gribnikov, A. N. Korshak, and **N. Z. Vagidov**. *Terahertz Ballistic Current Oscillations for Carriers with Negative Effective Mass*, J. Appl. Phys., v. 80, No. 10, pp. 5799-5808, 1996.
16. Z. S. Gribnikov, A. N. Korshak, **N. Z. Vagidov**, and V. V. Mitin. *Effect of Base Parameters on Gate-Controlled Squeeze of Current-Conducting Region in pnpn-Structures*, Solid-State. Electr., v. 39, No. 6, pp. 915-922, 1996.
15. A. N. Korshak, Z. S. Gribnikov, and **N. Z. Vagidov**. *Subterahertz and Terahertz Oscillations of Ballistic Current in Uniaxially Compressed Narrow Bases*, In book: Hot Carriers in Semiconductors, K. Hess and others (ed.). Plenum Press, pp. 187-189, 1995.
14. **N. Z. Vagidov**, Z. S. Gribnikov, and A. N. Korshak. *Ballistic Electron Current in System of Asymmetrical Double Quantum Wells and its Terahertz Oscillations*, In book: Hot Carriers in Semiconductors. K. Hess and others (ed.). Plenum Press, pp. 183-186, 1995.
13. Z. S. Gribnikov, A. N. Korshak, and **N. Z. Vagidov**. *Generation of Terahertz Current Oscillations by Ballistic Carriers with Negative Effective Mass*, Lithuanian Journal of Physics, v. 35, No. 5-6, pp.495-501, 1995.
12. Z. S. Gribnikov, A. N. Korshak, **N. Z. Vagidov**, and V. V. Mitin. *Ballistic Generator of Terahertz Oscillations*, Proceedings 1995 Internat. Semiconduct. Dev. Res. Symp., pp. 451-454, Charlottesville, 1995.
11. **N. Z. Vagidov**, Z. S. Gribnikov, A. N. Korshak, and V. V. Mitin. *Intermediate State of a Controllable Four-Layer pnpn-Structure*, Semiconductors, v. 29, No.11, pp. 1021-1029, 1995.
10. **N. Z. Vagidov**, Z. S. Gribnikov, and A. N. Korshak. *Space Charge of Injected Ballistic Electrons with Negative Effective Masses in Terahertz Range*, Semiconductors, v. 29, No. 11, pp.1014-1020, 1995.
9. **N. Z. Vagidov**, Z. S. Gribnikov, and A. N. Korshak. *Space-Charge-Limited Ballistic Currents in Thin Doped Conducting Channels*, Semiconductors, v. 29, No. 3, pp. 286-290, 1995.
8. **N. Z. Vagidov**, Z. S. Gribnikov, and A. N. Korshak. *Terahertz-Range Oscillations of the Ballistic Current of Electrons with a Negative Effective Mass*, JETP Lett., v. 61, No. 1, pp. 38-43, 1995.
7. **N. Z. Vagidov**, Z. S. Gribnikov, and A. N. Korshak. *Ballistic Currents in Semiconductor Thin Layers*, Semiconductors, v. 28, No. 11, pp. 1033-1038, 1994.
6. Z. S. Gribnikov and **N. Z. Vagidov**. *Ballistic Conductivity of a Quantum Well with a Resonant Tunnel Reflector*, Semiconductors, v. 26, No. 12, pp. 1162-1165, 1992.
5. Z. S. Gribnikov and **N. Z. Vagidov**. *Ballistic Conductance of Different Versions of Tunnel Contacts between Quantum Wells*, Lithuanian Journal of Physics, v. 32, No. 5, pp. 61- 64, 1992.
4. **N. Z. Vagidov** and V. M. Ivashchenko. *Transport of Two-Dimensional Electrons in the Self-Consistent Quantum Well*, Ukr. Fiz. Zh., v. 37, No. 5, pp. 781-788, 1992.

3. **N. Z. Vagidov**, Z. S. Gribnikov, and V. M. Ivashchenko. *Modeling of Electron Transport in Real Space in GaAs/Al_xGa_{1-x}As Heterostructures (with Low and High Values of x)*, Sov. Phys. Semicond., v. 24, No. 6, pp. 684-689, 1990.
2. **N. Z. Vagidov**, Z. S. Gribnikov, and V. M. Ivashchenko. *Drift Velocity of Hot Electrons in Accumulation Layers with a Nonthermal Electron Energy Distribution*, Sov. Phys. Semicond., v. 23, No. 2, pp. 188-192, 1989.
1. R. R. Bashirov and **N. Z. Vagidov**. *Theory of the b-Drift in the Case of Self-Heating*, Sov. Phys. Semicond., v. 18, No. 3, p. 358, 1984.