

CURRICULUM VITAE

Tetiana L. Linnik

Department of Theoretical Physics
V.E. Lashkaryov Institute of Semiconductor Physics
Pr. Nauki 41
Kiev 03028
Ukraine

e-mail: linnik1971@hotmail.com

fax: 38-044-5256033

tel: 38-044-5256033

Personal:

Date of Birth: November 23, 1971

Citizenship: Ukraine

Languages: English, Ukrainian, and Russian

Scientific employment:

December, 2007 – present: Senior research associate;

August, 2001 – December, 2007: Research associate;

March, 1994 – August, 2001: Engineer-researcher;

All employments are at the V.E. Lashkarev Institute of Semiconductor Physics ;

Degrees:

- Institute of Semiconductor Physics, Kiev, 2002, PhD in Solid State Physics.
- Kiev State University, 1994, MS in Physics.

Research experience:

Solid State Physics, in particular:

- local states in semiconductors;
- electron-phonon interaction in nanostructures;

- symmetry-based approaches in solid state physics;
- application of picosecond acoustics to magnetic systems.

Awards and recognitions

- INTAS grant for young researchers (2001);
- grant of Ukrainian Academy of Sciences for young scientists (2002);
- first prize for young researchers, Institute of semiconductor physics (2003).
- Junior associate of the Abdus Salam International Centre for Theoretical Physics (2003);

The idea of acoustic laser (SASER) initially proposed in the theoretical paper where T. Linnik was one of the coauthors was recognized in the scientific and public press as one of the physics highlights in 2006 year:

1. *A New Kind of Acoustic Laser*. APS News, February, p.1-5 (2007).
2. *Sonic laser set to make a big noise*. BBC Focus , August, p.14 (2006).
3. *A little big noise*. The Economist, June 10th (2006)
4. *“Saser” pumps out coherent sound waves*. OPN, September , p. 9, (2006)

Publications:

1. T. L. Linnik, Yu. G. Rubo and V. I. Sheka. *Anisotropy of a hole magnetic polaron in a semimagnetic semiconductor*. JETP Lett., **63**, p. 222 (1996).
2. T. L. Linnik and V. I. Sheka. *The shallow acceptor eigenstates and spin Hamiltonian in GaAs-type semiconductors*. Phys. Stat. Sol. (b), **210**, p. 801 (1998).
3. T. L. Linnik and V. I. Sheka. *Acceptor states in the cubic semiconductors with the large ratio of hole masses*, Physics of the Solid State, **41**, p 1425 (1999).
4. B. A. Glavin, V. A. Kochelap and T. L. Linnik. *Generation of high frequency coherent acoustic phonons in a weakly coupled superlattice*. Appl. Phys. Lett., **74**, N23 (1999).
5. S. M. Soskin, V. I. Sheka, T. L. Linnik, M. Arrayas, I. Kh. Kaufman, D. G. Luchinsky, P. V. E. McClintock and R. Manella "Kramers problem: beyond quasi-stationarity", in Stochastic and chaotic dynamics in Lakes, ed. D.Broomhead, E.Luchinskaya, P.V.E.McClintock, T.Mullin, AIP, Melville, NY, USA, pp. 60-68 (2000).
6. S. M. Soskin, V. I. Sheka, T. L. Linnik, M. Arrayas, I. Kh. Kaufman, D. G. Luchinsky, P. V. E. McClintock and R. Manella "Short time scales in the Kramers problem" in Unsolved Problems of Noise, ed. D. Abbot and L. B. Kish, AIP, Melville, NY, USA, pp.503-508 (2000)
7. S. M. Soskin, V. I. Sheka, T. L. Linnik and R. Mannella "Short time scales in the Kramers problem: A stepwise growth of the escape flux". Phys. Rev. Lett., **86**, p. 1665-1669 (2001).
8. B. A. Glavin, V. A. Kochelap and T. L. Linnik "Current response of a superlattice irradiated by nonequilibrium phonons", JETP Lett., **71**, p. 191 (2000).
9. S. M. Soskin, V. I. Sheka, T. L. Linnik and R. Mannella "Characteristic types of evolution of noise-induced escape flux at short time scales". Fluctuation and Noise Letters., **1**, N2, p. L87-L95 (2001).
10. S. M. Soskin, V. I. Sheka, T. L. Linnik, M. Arrayas, I. Kh. Kaufman, D. G. Luchinsky, P. V. E. McClintock and R. Mannella "Noise-induced escape on time scales preceding quasistationarity: New developments in the Kramers problem". Chaos, **11**, N3, p. 595-604 (2001).

11. B. A. Glavin, V. A. Kochelap, T. L. Linnik, K. W. Kim and M. A. Stroschio. *Voltage-controlled generation of high-frequency coherent acoustic phonons in superlattices*. Physica E, **12**, N1-4, p. 458 (2002).
12. B. A. Glavin, V. A. Kochelap, T. L. Linnik, K. W. Kim and M. A. Stroschio. *Generation of high-frequency coherent acoustic phonons in superlattices under hopping transport. I. Linear theory of phonon instability*. Phys. Rev. B, **65**, N8, art. 085303 (2002).
13. B. A. Glavin, V. A. Kochelap, T. L. Linnik, K. W. Kim and M. A. Stroschio. *Generation of high-frequency coherent acoustic phonons in superlattices under hopping transport. II. Steady-state phonon population and electric current in generation regime*. Phys. Rev. B, **65**, 0853034 (2002).
14. S. M. Soskin, V. I. Sheka and T. L. Linnik. *Noise-induced escape flux on time-scales preceding quasistationarity*. Semiconductor Physics, Quantum Electronics and Optoelectronics, **6**, pp. 382-385 (2003).
15. B. A. Glavin, V. A. Kochelap, T. L. Linnik and K. W. Kim. *Pekar mechanism of electron-phonon interaction in nanostructures*. Phys. Stat. Sol. C, **1**, 2779 (2004).
16. B. A. Glavin, V. A. Kochelap, T. L. Linnik and K. W. Kim. *Electron-phonon interaction via the Pekar mechanism in nanostructures*. Phys. Rev. B, **71**, 081305 (2005).
17. B. A. Glavin, V. A. Kochelap, T. L. Linnik, A. J. Kent, N. M. Stanton and M. Henini. *Resonance-like piezoelectric electron-phonon interaction in layered structures*. Phys. Rev. B, **74**, 165317 (2006).
18. A. J. Kent, R. N. Kini, N. M. Stanton, M. Henini, B. A. Glavin, V. A. Kochelap and T. L. Linnik. *Acoustic Phonon Emission from a Weakly Coupled Superlattice under Vertical Electron Transport: Observation of Phonon Resonance*. Phys. Rev. Lett., **96**, 215504 (2006).
19. P. M. Walker, A. J. Kent, M. Henini, B. A. Glavin, V. A. Kochelap and T. L. Linnik. *Terahertz acoustic oscillations by stimulated phonon emission in an optically pumped superlattice*. Phys. Rev. B., **79**, 245313 (2009).
20. A. M. Yaremko, V. M. Dzhagan, V. O. Yukhymchuk, T. L. Linnik, H. Ratajczak, J. Baran and A. J. Barnes. *Many particle approach to excitons in crystals: Electron-electron and electron-phonon interactions*. Journal of Molecular Structure, **976**, N1-3, p. 205 (2010).
21. T. L. Linnik, A. V. Scherbakov, D. R. Yakovlev, X. Liu, J. K. Furdyna and M. Bayer. *Theory of magnetization precession induced*

- by a picosecond strain pulse in ferromagnetic semiconductor (Ga,Mn)As. Phys. Rev. B. **84**, -214432 (2011).
22. T. L. Linnik. *Effective Hamiltonian of strained graphene*. J. Phys. Condens. Matter. **24**, 205302 (2012).
23. J. V. Jäger, M. Bombeck, A. V. Scherbakov, T. Linnik, D. R. Yakovlev, X. Liu, J. K. Furdyna, A. V. Akimov and M. Bayer. *Magnetization precession induced by quasi-transverse picosecond strain pulses in (311) ferromagnetic (Ga,Mn)As*, Phys. Rev. B **87**, 060302(R) (2013)
24. J.V. Jäger, A.V. Scherbakov, T. L. Linnik, D.R. Yakovlev, M. Wang, P. Wadley, V. Holy, S.A. Cavill, A.V. Akimov, A.W. Rushforth, and M. Bayer. *Picosecond inverse magnetostriction in Galfenol thin films*, Appl. Phys. Lett. **103**, 032409 (2013)
25. A.V. Scherbakov, M. Bombeck, J.V. Jäger, A. S. Salasyuk, T. L. Linnik, V. E. Gusev, D.R. Yakovlev, A. V. Akimov, and M. Bayer. *Picosecond opto-acoustic interferometry and polarimetry in high-index GaAs*, Optics Express **21**, 16473 (2013)
26. T. L. Linnik. *Photoinduced valley currents in strained graphene*, Phys. Rev. B **90**, 075406 (2014)

Proceedings

1. T. L. Linnik, E. V. Mozdor and V. I. Sheka. *Acceptor energy levels for cubic semiconductors with the large ratio of effective masses of heavy and light holes*. Abstracts of the 16-th Pekar International Conference on Theory of Semiconductors. Odessa, October, 4-7 (1994) in Russian.
2. A. M. Yaremko, D. I. Ostrovskii, T. L. Linnik, S. V. Virko and M. Allavena. *The shape band of lattice vibrations strongly interacting with the impurity molecule librations*, p.17. Proceeding of the Int. Conf. "Hydrogen bond", May 10-15, Kyiv, Ukraine (1998).
3. B. A. Glavin, V. A. Kochelap and T. L. Linnik. *Amplification of acoustic phonons in a multiple quantum well structures*. Proceedings of the 24th International Conference on Physics of Semiconductors, World Scientific, E6 (1999).
4. S. M. Soskin, V. I. Sheka, T. L. Linnik, M. Arrayas, I. Kh. Kaufman, D. G. Luchinsky, P. V. E. McClintock and R. Manella "Short time-scales in the Kramers problem", in "Unsolved Problems of Noise and Fluctuations", ed. D. Abbott and L.B. Kish (proceedings of the conference in Adelaide, July 1999), American Institute of Physics, Melville, NY, p 503-508 (2000).

5. B. A. Glavin, V. A. Kochelap, T. L. Linnik, K. W. Kim and A. Stroschio. *Generation of high-frequency coherent acoustic phonons in biased superlattices*. Proc. 14th Int. Conf. on Electron Properties of 2D Systems. Part I, p. 357-360 (2001).
6. A. M. Yaremko, B. Serdega, V. Shinkar, T. Linnik, E. Venger. *Features of press induced birefringence of light for Si and Ge crystals in the absorption frequency region*. Proc. of SPIE. Optical organic and inorganic materials. Ed. by S.P.Asmontas, J.Graauskas. Vilnius, Lithuania, V.4415, p. 172 – 183 (2000).
7. S. M. Soskin, V. I. Sheka, T. L. Linnik and R. Mannella. *Noise-induced transitions in overdamped systems: short times*. In Noise in Complex Systems and Stochastic Dynamics, eds. L.Schimansky-Geier, D. Abbott, A. Neiman and C. Van den Broeck, Proceeding Series Vol. 5114, SPIE, Washington, pp.289-300 (2003)
8. S. M. Soskin, V. I. Sheka, T. L. Linnik and R. Mannella. *Exact general solution of the activation problem in an overdamped system on finite times*. Proceedings of SPIE's First Int. Sym. on Fluctuations and Noise [5114-46], New Mexico USA, 1-4 June (2003).
9. S. M. Soskin, M. Arrayas, I. Kh. Kaufman, T. L. Linnik, D. G. Luchinsky, R. Manella, P. V. E. McClintock and V. I. Sheka, *Kramers problem on time-scales preceding quasi-stationarity*, in Proceedings of the International Conference on Theoretical Physics TH2002 (Paris, 2002), eds. D. Iagolnitzer, V. Rivasseau and J. Zinn-Justin, (BirkhAuser Verlag, Basel, Switzerland, 2003), Supplement, pp. 327-350
10. T. L. Linnik, B. A. Glavin, V. A. Kochelap and K. W. Kim. *Pekar mechanism of electron-phonon interaction in the low-dimensional structures*. Proceedings of the VI Russian conf. of semiconductor physics, 27-31 october, S.-Petersburg, p.303-304 (2003).
11. S. M. Soskin, V. I. Sheka, T.L.Linnik and R. Mannella, *Short-time dynamics of noise-induced escape*, in Noise in Complex Systems and Stochastic Dynamics III, edited by L.B.Kish, K. Lindenberg and Z. Gingl, Proceedings of SPIE Vol. 5845 (SPIE, Bellingham, WA, 2005) ,pp. 256-270
12. S. M. Soskin, V. I. Sheka, T.L.Linnik and R. Mannella, *Escapes and transitions in overdamped systems on short times: general solution*, in Unsolved Problems of Noise and Fluctuations, eds. L. Reggiani, C.Penneta, V. Akimov, E. Alnito, M. Rosini (AIP,

Melville, NY, USA, 2005), AIP Conference Proceedings Volume 800, pp.262-269

13. B. A. Glavin, V. A. Kochelap, T. L. Linnik, A. J. Kent, R. N. Kini and M. Henini. *Demonstration of monochromatic terahertz acoustic phonon generation in superlattices under hopping transport*. Proc. of the 28th Intern. Conf. on Physics of Semiconductors, AIP CP893, p. 521-522 (2007).
14. B. A. Glavin, V. A. Kochelap and T. L. Linnik. *Resonance piezoelectric electron-phonon interaction in multiple-quantum well structures*. Proc. of the 28th Intern. Conf. on Physics of Semiconductors, AIP CP893, p. 603-604 (2007).
15. B. A. Glavin, V. A. Kochelap, T. L. Linnik, P. Walker, A. J. Kent and M. Henini. *Monochromatic terahertz acoustic phonon emission from piezoelectric superlattices*. Proc of 12th Intern. Conf. on Phonon Scattering in Condensed Matter. Journal of physics: Conference Series, v.92, 012010 (2007).