CURRICULUM VITAE

Valentin V. Nikolaev

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Personal Data

Date of birth: August 19, 1978
Birthplace: St.-Petersburg, Russia
Marital status: Single
Citizenship: Russian

Education

1999-present — **Ph.D. in Physics (Theory of Semiconductor Nanostructures).** Due to graduate in September 2002.
School of Physics, **University of Exete**r, Exeter, UK
Ph.D. Thesis title: ”Many-Particle Correlations in Quasi-Two-Dimensional Electron-Hole Systems”
Scientific supervisor: Dr. M.E. Portnoi

1999-2001 — **M.Sc. degree in Technical Physics**
Physico-Technical Faculty, **St.-Petersburg State Technical University**, Russia
M.Sc. Thesis title: ”Theory of Indirect Excitons in Spatially Separated Electron-Hole Plasma and its Application to GaN/AlGaN-based Heterostructures”

1995-1999 — **B.Sc. degree** with Honours, **St.-Petersburg State Technical University**, Russia
B.Sc. Thesis title: ”Advantages of Quantum Dot Lasers over Semiconductor Lasers based on Quantum Wells and Double Heterostructures"

1995 — **High School Certificate** from **Physico-Mathematical School (Gymnasium) No 30,** St.-Petersburg, Russia

Employment History

1999-present — **Graduate Research Assistant,** School of Physics, **University of Exeter**, UK.

2001-present — **Research Scientist** (member of staff), M.A. Kaliteevski research group, Prof. P.S. Kopiev laboratory, **A.F. Ioffe Physico-Technical Institute**, St-Petersburg, Russia (currently on leave)

2000-present — **Graduate Teaching Assistant** at the School of Physics, **University of Exeter**. Duties include demonstrating and tutoring at undergraduate courses in physics and mathematics and conducting a quantum mechanics workshop for M.Phys. students.

1997-2001 — **Research Assistant at Ioffe Physico-Technical Institute**, St-Petersburg, Russia.

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Awards

- **Award for the best young scientist paper** at international conference "Physics of Light-Matter Coupling in Nitrides" **(PLMCN-1**) **(2001)**
- **Overseas Research Studentship Award** for the three-year postgraduate study in UK(**1999)**.
- **Soros Student Fellowship,** Open Society Institute, Soros Fund-Russia **(1998-1999)**
- **Ioffe Student Award,** A.F. Ioffe Phisico-Technical Institute, Russia **(1998)**

Research Interests

- Many-body theory of electron-hole correlations in low-dimensional semiconductor nanostructures. Optical and thermodynamic properties of such systems.
- Theoretical bases and modelling of semiconductor devices, in particular quantum dot lasers, vertical cavity surface emitting lasers (VCSEL's) and light emitting diodes (LED's).
- Theoretical investigation of confined photonic states and light-matter interaction in multi-dimensional microcavities and photonic crystals.

Research Experience

- Theoretical investigation of optical and thermodynamic properties of quasi-two-dimentional systems: self-consistent theory of screened electron-hole pairs was developed, basing on the Green's function technique. Ionisation degree and optical spectra for various quantum well systems were obtained numerically.(**Exeter University**,main collaborator – Dr M.E. Portnoi)
- Theory and modelling of exciton-photon interaction (multi-dimensional polaritons) in cylindrical and spherical microcavities. The transfer matrix method for structures with cylindrical and spherical symmetry was developed. (**Ioffe Institute and Exeter University**) Main collaborators: Dr. M.A. Kaliteevski (Ioffe Institute/Universite de Montpellier II), Prof. R.A. Abram research group (Durham University, UK), Prof. A. Kavokin (LASMEA, Universite Blaise Pascal-Clermont-Ferrand II, France).
- Photon recycling in planar semiconductor multi-quantum-well structures. Designing and modelling of a white LED.(**Exeter University**) Main collaborators: Dr. M.E. Portnoi and I. Eliashevich (GELcore LLC, Somerset, USA)
- Modelling of threshold and spectral characteristics of quantum dot semiconductor lasers. In collaboration with Dr. L. Asryan (Prof. R.A. Suris laboratory) and Prof. N.N. Ledentsov research group (**Ioffe Institute**).
- Modelling of light localisation in disordered opal crystals. Collaborators: M.A. Kaliteevski and Yu Vlasov (**Ioffe Institute**)

Results were published in 18 papers in international scientific journals (see **Publication List**).

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Computational Skills

I was trained as a **programmer** at the high school (St-Petersburg 30th School has specialisation in computer programming) and at the university. I write computer codes on professional level for several years now. I wrote more than **20 computer programs** applied to various scientific problems.

Programming languages: C++, Fortran.

Operating systems: Linux, Windows 95/ME.

Software: NAG/LAPACK routines, LaTeX, Xmgrace, Maple, MathCad, PowerPoint, Origin…

References

Dr. M.E. Portnoi, *Lecturer in Theoretical Physics*

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Prof. R.A. Abram

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Prof. A. Kavokin,

LASMEA, UMR6602 du CNRS, Universite Blaise Pascal-Clermont-Ferrand II,

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List of Publications and Conference Presentations is provided separately