CURRICULUM VITAE

Dr Stanko TOMIĆ
Computational Science and Engineering Department
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Nationality: British Citizen

PROFESSIONAL SKILLS:

Extensive research experience in the area of semiconductor nanostructures having published over 100 research papers (cited more than 350 times), two book chapters and given more than 10 talks at major International Conferences and a number of invited seminars at University Departments within the UK and abroad. Expert in algorithm and code design, and developing, maintaining and promoting codes for scientific use, with more than 320 licenses issued on my recent development of DL_EXCURV software package. Expert at collaborating with experimental research groups. Currently involved actively in writing several EPSRC grant applications. Currently acting as a referee for a number of major International Journals. Member of the program committee of the IEEE NUSOD conference and CCP3 steering panel. Extensive management experience, having taken courses in 'Certificate in First Line Management' (ILM3) and CCLRC's 'Standards of Management Excellence'. Extensive teaching experience at the University of Surrey and the University of Belgrade. Acted as Assistant Warden, University of Surrey, and as Secretary of the Young Researcher Society in VINCA Institute of Nuclear Sciences, Belgrade.

RESEARCH INTERESTS:

- Electronic structure theory of semiconductor nanostructures (III-V, IV, II-VI, wurtzite and zinc-blend).
- Electronic structure of impurities in semiconductors.
- Design and modelling of optoelectronic devices.
- **k·p**-perturbation theory, LMTO, Empirical pseudo-potential calculations, Density functional theory
- Theoretical EXAFS spectroscopy, SCF-Muffin-Tin Potentials
- Inter-band lasers: quantum dot & quantum well lasers. Inter-sub-band lasers: quantum cascades & quantum fountains. Gain and loss mechanisms in semiconductor lasers.
- Strained-layer structures/lasers; Layer inter-diffusion processes. Semiconductor devices under high pressure.
- Mid-infrared inter-sub-band optical properties of low dimensional structures. Electron-phonon scattering.
- Inter-sub-band optical nonlinearities in semiconductor quantum wells; SHG and optical rectification.
- Supersymmetry and Inverse Spectral Theory
- Data analysis of experimentally measured properties of semiconductor structures.
- Analysis of Poincaré maps in strongly nonlinear systems. Electromagnetic field calculations.

Active research collaborations with Prof. E.P. O'Reilly (Tyndall, Ireland), Prof. N.M. Harrison (Imperial College London), Prof. Alf R. Adams, FRS (Surrey), Prof. T.S. Jones (Imperial College London), Dr. A. Wander (DL, CCLRC), Prof. B.N. Murdin (Surrey), Prof. P. Harrison (Leeds), Prof. P.J. Klar (Marburg, Germany), Prof. I.A. Buyanova (Linkoping, Sweden), Prof. B. Hamilton (Manchester), Prof. G. Sankar (The Royal Institution of Great Britain), Prof. R. Cernik (DL, CCLRC), Prof. A. Dent (Diamond Light Source), Dr. F. Mosselmans (Diamond Light Source), Dr. A. Bleloch (SuperSTEM, CCLRC), Prof K.P. O'Donnell (Strathclyde).

COMPUTING EXPERTISE:

Software design, including developing and maintenance of codes, for large-scale scientific applications. Promoting, advertising and managing the distribution of scientific codes. Numerical techniques including; solution of PDEs, eigenvalues/eigenfunctions, finite difference, Fourier techniques (plane-waves), simulated annealing, minimization/maximization, conjugate gradient, BFGS, ill-conditioned linear systems. Parallel programming including the use of; ScaLAPACK, BLACS, ATLAS, ESSL, MPI. Programming Languages including; Fortran 90/77 (more then 10 years experiences), C/C++ (basic). Experience with operating systems including; Linux/UNIX, MS-Windows, DOS. Experience with using and developing packages including; DL_EXCURV, DLV, Crystal (DFT), Relax3D, SCF-KKR, AVS Express, CVS, MySQL.

AWARDS & PROMOTIONS:

17 December 2003: Promoted to "Scientific Advisor" (Research Professorship) by the Ministry of Science and Technology of the Government of the Republic of Serbia.

15 September 1999: Promoted to "Research Assistant" (Docent) by the Ministry of Science and Technology of the Government of the Republic of Serbia.

EDUCATION:

25 December 1998; Ph.D. - School of Electrical Engineering, University of Belgrade, Yugoslavia. Ph.D. Thesis title:

> **Analysis of nonlinear optical properties of semiconductor quantum wells using inverse spectral theory**

16 September 1996; M.Sc. - School of Electrical Engineering, University of Belgrade, Yugoslavia. Master thesis title:

> **Optimization of nonlinear susceptibility in super symmetric semiconductor quantum wells**
> (Average score on exams: 10 of 10) (Equivalent of UK MPhil)

5 July 1993; Diploma in Electrical Engineering - School of Electrical Engineering, University of Belgrade, Yugoslavia, Course of Study: Engineering Physics Diploma title:

> **Modulation characteristics and modal analysis of semiconductor lasers**
> (5 years course of study, average score on exams: 8.52 of 10; on diploma exam 10, equivalent to First Class Honours in Engineering Physics)

EMPLOYMENT HISTORY:

- From 1 March 2003 to present
  Senior Research Officer: Software developer and Manager: Computational Science and Engineering Department, CCLRC Daresbury Laboratory, Cheshire, UK

- From 1 November 2002 to 1 March 2003
  Research Associate: Department of Physics and Astronomy, University of Sheffield, Sheffield, UK

- From 2 May 2000 to 1 November 2002
  Research Fellow: Department of Physics, University of Surrey, Guildford, Surrey, UK

- From 1 October 1993 to 1 May 2000 Jointly appointed as
  Research Associate: Semiconductor Nanostructures and Superlattices Group, Department of Engineering Physics, School of Electrical Engineering, University of Belgrade, Yugoslavia and
  Research Scientist: VINČA Institute for Nuclear Sciences, Belgrade, Yugoslavia (until 1 Jun 1998) and as
  Acting Head of Computational Physics Group: TESLA AI, VINČA Institute for Nuclear Sciences, Belgrade, Yugoslavia. from 1 Jun 1998 to 1 May 2000

- From 17 September 1995 to 24 November 1995
  Guest Research Associate
  Joint Institute for Nuclear Research, Dubna, Moscow, Russia

- From 1 September 1993 to 1 October 1993
  Research Associate: Semiconductor Nanostructures and Superlattices Group, Department of Engineering Physics, School of Electrical Engineering, University of Belgrade, Yugoslavia

TEACHING HISTORY:

- From September 2001 to July 2002
  Tutor in Mathematics I, and Atomic, Molecular & Quantum Physics I, (2 semesters)
  Department of Physics, University of Surrey, Guildford, Surrey, United Kingdom

- From 1 February 1991 to 30 June 1992
  Teaching Assistant in Atomic and Molecular Physics, (2 semesters)
  School of Electrical Engineering, University of Belgrade, Yugoslavia

POSITIONS OF RESPONSIBILITY:

- From 1 September 2000 to 1 November 2002
  Assistant Warden, University Court, University of Surrey, Guildford, Surrey, UK

- From November 1996 to 1 May 2000
  Secretary of Young Researcher Society in VINCA Institute of Nuclear Sciences, Belgrade, Yugoslavia

- From September 1986 to September 1987
  Military service in Yugoslav National Army

GRANTS:

From December 2006 to December 2008
"Local structure determinations of (In,Ga)-based semiconductor alloys" CCLRC-SRS Beam Time Experimental proposal, Co-investigator

From 1 June 2006 to 31 December 2006
"Effect of nitrogen disorder in dilute nitrogen GaInNAs quantum dots" (ST is PI) Computer time bid awarded with 180000AU's on HPCx supercomputer under "Material Chemistry using Terascaling Computing", (GR/S13422/01)

From 1 December 2005 to 1 Jun 2006
"Band structure of dilute nitrogen GaInNAs/GaAs(N) quantum dots by 10-band **k·p** theory" (ST is PI) Computer time bid awarded with 130000AU's on HPCx supercomputer under "Material Chemistry using Terascaling Computing", (GR/S13422/01)

From October 2004 to September 2007
"Testing Improved *ab initio* XANES Theory (CCP3): Polymorphs of Highly Ionic Fluorides" CCLRC-SRS Beam Time Experimental proposal, Co-investigator

PROFESSIONAL COURSES:

From 15 September 2005 to 15 January 2006
Certificate in First Line Management
Institute of Leadership and Management (ILM3), Warrington, UK

From 11 July 2005 to 13 July 2005
Standards of Management Excellence
Village Hotel, Warrington, UK

From 26 October 2004 to 28 October 2004
Parallel programming with Message Passing Interface (MPI)
University of Edinburgh, Edinburgh, Scotland, UK

From 29 August 2001 to 5 September 2001
Participant in International Summer School on Semiconductor Lasers
University College Cork, Cork, Ireland

From 7 May 2001 to 25 May 2001
Participant in Spring College on Numerical Methods in Electronic Structure Theory
International center for theoretical physics, Trieste, Italy

From 13 January 1997 to 14 February 1997
Participant in 100 hours of lectures and tutorials on Accelerator Physics
CERN Accelerator School, CERN, Geneva, Switzerland

ADDITIONAL INFORMATION:

Clean, full International driving license. Foreign languages; Serbian (native), Russian (reading). Good inter personal skills. Extensive traveling experience. Interests include aero-modeling, movie history, and sports, especially skiing and swimming.