Dr Caspar James FALL, CPhys. MInstP.

School of Physics University of Exeter Exeter EX4 4QL United Kingdom Phone: +44−1392−264198 Fax: +44−1392−264111	Home: 42 Prospect Park St James Exeter EX4 6NA United Kingdom Phone: +44−1392−435260	c.j.fall@exeter.ac.uk http://newton.ex.ac.uk/people/fall/ Single British Nationality Born 7th January 1972 English and French mother tongues

Work Experience

1999−2001	**Research Fellow at the School of Physics of the University of Exeter, United Kingdom** First−principles Research into Defects in Gallium Nitride, with Prof. R. Jones, using the AIMPRO ab initio code • June 2001: three weeks stay at EPFL, Switzerland, as an invited scientist • May 2001: three weeks at CINECA Supercomputing Centre, Bologna (I), as a visiting scientist under the European MINOS programme • March 2001: organisation of WideGap2001, a three−day conference gathering 70 scientists from 5 continents: http://widegap2001.ex.ac.uk • September 2000: one month scientific collaboration at the Helsinki University of Technology (Finland) • March 2000: ten days stay at University of Newcastle (UK), as a visiting scientist programming in Fortran90 • Extensive use of Cray T3E, SGI Origin 2000, and IBM SP systems
1995−1999	**PhD in Computational Physics at the Institut Romand de Recherche Numérique en Physique des Matériaux, Lausanne, Switzerland** Research in solid state physics using numerical simulations, with Prof. A. Baldereschi, entitled *Ab initio study of the work functions of elemental metal crystals* • Extensive Fortran and Mathematica programming on Cray YMP, NEC SX−4, SG, and Digital machines, with management of 65'000 lines of parallel and vectorised code • Code parallelisation using the CRAFT and PVM libraries • Unix administration, programming with Unix scripts, development of LaTeX macros
Summer 94	**Engineering project (Rural Engineering Department − EPFL)** **An exploration of three−dimensional visualisation of LIDAR signals** • Off−line treatment of Light Detection And Ranging (LIDAR) signals for measuring chemical pollution in the atmosphere with a double laser beam • Data analysis and programming in C • 3D visualisation with IRIS Explorer, Silicon Graphics
Summer 93	**United Nations Development Programme, Phnom Penh, Cambodia** Training of local staff for office computing on Windows
Summer 92	**Danish Action for Aid to Afghan Refugees, Peshawar, Pakistan** Set−up of a Foxpro database for personnel management

Education

1997−1998	**Postgraduate course on Communication Systems** **Communication Systems Division of the Swiss Federal Institute of Technology Lausanne (EPFL), Switzerland** Practical group project: *Security and web servers* • Set−up of a secure Apache−Stronghold SSL server, under Linux, for the controlled distribution of software at the Computed−Assisted Teaching Laboratory • Installation of a private certification authority using the SSLeay library • Authentication of remote clients by means of personal client certificates • Study of the principal security algorithms currently in use on the web: RSA, DSS, RC4

1990−1995	**Physics Engineering MSc (April 1995)** **Physics Department of the Swiss Federal Institute of Technology Lausanne (EPFL), Switzerland** • 1995 Dommer prize for the best undergraduate results over 4 years of study at the EPFL • 1993 Cousin prize for the best results over the first two years of study at the EPFL • Masters' thesis in the Micro− and Optoelectronics Institute with Prof. E. Kapon, entitled: *Quantum confinement in crescent−shaped quantum wires*
1987−1990	**Gymnase de Chamblandes, Pully, Vaud, Switzerland** • Swiss scientific baccalaureate (July 1990) • Prizes for "general excellence", maths, physics, and chemistry−biology

Other Professional Activities

Feb. 2001	Three−day course on **Practical Software Development for Computational Scientists and Engineers**, Edinburgh Parallel Computing Centre, United Kingdom
Dec. 2000	**Chartered Physicist** and Membership status awarded by the Institute of Physics, London, United Kingdom
June 2000	Two weeks intensive **Intermediate German**, organised by University of Exeter Language Centre
Mar. 2000	Three−day EPSRC **Career Development School**, organised by University College London, London
Feb. 2000	Four−day course on **Visual Basis for Applications** run by University of Exeter Computer Services, Exeter, UK
1996−1999	**Internet Marketing:** http://mypage.bluewin.ch/a−z/latorretta/ Administration of a web server for letting a holiday home in Tuscany • Full administration and design of a web server for a holiday home in Tuscany • Financial control of rentals • Contacts with holiday−makers from four continents
1996−1999	**Teaching assistant** for 50 third−year physics students at the EPFL, Lausanne, for the numerical experimentation practical of Prof. A. Baldereschi • Programming for engineers in Fortran 90
1996−1998	**Representative of the intermediate staff** on the Board of Studies of the Physics Department, EPFL, Lausanne • Coordination of the curriculum for first and second cycles of undergraduate physics studies
1997−1999	Graphic design of posters and logos for cultural events • Physics students annual ball Artiphys'98 • Three performances of the Village Players theatre group

International conferences

January 2002	ONR Workshop on Extended Defects in Wide Gap Semiconductors: Electrical and Optical Effects, San Pedro, Belize Oral Presentation: Interpretation of EELS spectra of dislocations in GaN
November 2001	MRS Fall Conference, Boston, USA Oral Presentation: Theory of Electron Energy Loss Spectroscopy and its Application to Threading Edge Dislocations in GaN
July 2001	International Conference on Defects in Semiconductors (ICDS−21), Giessen, Germany Poster Presentation: Modeling Electron Energy−Loss Spectra of Dislocations in Silicon and Diamond (Online)
June 2001	De Beers Diamond Conference, University of Bristol, UK Oral Presentation: Modelling electron energy−loss spectra of dislocations in diamond Poster Presentation: The Diamond Maker by H. G. Wells (Online)

March 2001	WideGap2001 Conference, University of Exeter, United Kingdom Secretary General: Web Site, Sponsorships, Advertising, Registrations, Proceedings Editor, Organisation
Aug. 2000	Psi−K 2000 Conference, Schwäbisch−Gmünd, Germany Oral Presentation: Electronic and Vibrational Properties of Mg− and O−Related Complexes in GaN
July 2000	Fourth European GaN Workshop, Nottingham, United Kingdom Poster Presentation
May 2000	European Materials Research Society 2000 Meeting, Strasbourg, France Poster Presentation
March 2000	European cooperation in the field of scientific & technical research (COST) P3 meeting, working group 1, Heraklion, Greece Oral Presentation: Work function anisotropy in noble metals
Sept. 1998	EPS Europhysics Conference on Computational Physics, Granada, Spain Poster Presentation: Work Functions around Sharp Aluminum Facet Edges
Sept. 1997	VII Italian−Swiss Workshop on Computational Materials Science, Cagliari, Italy Oral Presentation: Ab Initio Study of the Anisotropy of the Aluminium Work Function
Feb. 1997	Spring Meeting of the Swiss Physics Society, Neuchâtel, Switzerland Oral Presentation

Scientific Publications

Theory of Electron Energy Loss Spectroscopy and its Application to Threading Edge Dislocations in GaN
C. J. Fall, R. Jones, P. R. Briddon, A. T. Blumenau, T. Frauenheim, M. I. Heggie
Proceedings of MRS Fall 2001 meeting, in press

Theoretical maps of work function anisotropies
C. J. Fall, N. Binggeli, and A. Baldereschi
Phys. Rev. B, Vol. 65, No. 4, p. 045401, January 2002 (Abstract)

Modelling electron energy−loss spectra of dislocations in silicon and diamond
C. J. Fall, J. P. G. Goss, R. Jones, P. R. Briddon, A. T. Blumenau, and T. Frauenheim
Physica B, in press

Deep Thoughts on Shallow Dopants: Widegap2001 Conference Report
C. J. Fall and R. Jones
Compound Semiconductor Magazine, June 2001, pp. 55−57 (PDF)

Electronic and vibrational properties of Mg− and O−related complexes in GaN
C. J. Fall, R. Jones, P. R. Briddon, and S. Oberg
Materials Science and Engineering B, Vol. 82/1−3, pp. 88−90, May 2001 (Vol. Index)

Low−frequency vibrational spectroscopy in SiC polytypes
B. Pajot, C. J. Fall, J. L. Cantin, H. J. von Bardeleben, R. Jones, P. R. Briddon, F. Gendron
Materials Science Forum, Vol. 353−3, pp. 349−352, 2000

Small aggregates of interstitials and models for platelets in diamond
J. P. Goss, B. J. Coomer, R. Jones, C. J. Fall, C. D. Latham, P. R. Briddon, and S. Oberg
Journal of Physics: Cond. Matter, Vol. 12, No. 49, pp. 10257−10261, Dec. 2000 (Abstract)

Work function anisotropy in noble metals: Contributions from d−states and effects of the surface atomic structure
C. J. Fall, N. Binggeli, A. Baldereschi, and A. Dal Corso
Physical Review B, Vol. 61, No. 12, pp. 8489−8495, March 2000 (Abstract)

Deriving Accurate Work Functions from Thin−Slab Calculations
C. J. Fall, N. Binggeli, and A. Baldereschi
Journal of Physics: Cond. Matt., Vol. 11, No. 13, pp. 2689−2696, April 1999 (Abstract)

Study of Electronic States in Hyperbolic Crescent−Shaped Quantum Wires
C. J. Fall, M.−A. Dupertuis, and E. Kapon
Optical and Quantum Electronics, Vol. 31, pp. 201−213, March 1999 (Abstract)

Anomaly in the Anisotropy of the Aluminum Work Function
C. J. Fall, N. Binggeli, and A. Baldereschi

Physical Review B, Vol. 58, No. 12, pp. R7544−R7548, September 1998 (Abstract)

General Solution Scheme for Second−Order Differential Equations: Application to Quantum Transport
M. Di Ventra and C. J. Fall
Computers in Physics, Vol. 12, No. 2, pp. 248−253, May−June 1998

Optical Spectroscopy of Semiconductor Quantum Wires
D. Y. Oberli, F. Vouilloz, M.−A. Dupertuis, C. J. Fall, and E. Kapon
Nuovo Cimento D, Vol. 17D, No. 11, pp. 1641−1650, November 1995