

David Grant
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Education

- **University of Waterloo** Waterloo, ON
M.A.Sc., Electrical Engineering (Grades: 80%) Sep. 2002 - May. 2004
 - Relevant courses: Semiconductor Devices: Physics and Modelling, Digital VLSI Design, Amorphous Silicon, Mixed-signal modelling with VHDL-AMS
- **University of British Columbia** Vancouver, BC
B.A.Sc. Engineering Physics (Electrical Engineering Option) 1997-2002
 - Graduated with Honors, **86%** cumulative average, and Dean's Honour List each year.
 - Relevant courses: Solid-state physics, Quantum Mechanics, Semiconductor Devices (BJT, HBT, FET, analog IC layout and simulation), Digital Systems Design using VHDL, Waveguides and Photonics, RF, Analog/Digital Communications Systems, Analog Hardware Design

Work Experience

- **D-Wave Systems** Vancouver, BC
Junior Research Scientist and Software Engineer May 2002 - Aug. 2002
 - Implemented quantum computing algorithms in a JAVA quantum computer simulator, such as quantum Fourier transform, and the quantum eigenvalue finding algorithm.
 - Implemented algorithms for generating Hamiltonians for small molecules.
- **EXI Wireless** Richmond, BC
Bluetooth Group Software and Hardware Engineer May 2001 - Aug. 2001
 - Wrote firmware and PC software tools to implement an embedded FLASH/EPROM memory serial programmer for an Atmel Thumb AT91FR4081 processor.
 - Tested, debugged, and fixed Bluetooth development boards with hardware problems.
 - Programmed an embedded serial command interface and memory peak/poke utilities.
 - Integrated EXI's patient monitoring system with Bluetooth wireless networking technology.
- **EXI Wireless** Richmond, BC
RFID Tags Group Hardware Engineer Sep. 2000 - Dec. 2000
 - Managed a Bluetooth daughter-board project; created schematics and PCBs using OrCAD.
 - Created an embedded web server demo using a DOS Stamp single-board computer.
 - Designed and implemented an automated RFID Tag Tester. Created schematics and PCB using OrCAD, and programmed GPIB and serial port communication routines in C.
 - Tested RF ID tags using RF equipment (spectrum analyzers, attenuators, TEM cells, antennae).
 - Programmed GPIB data acquisition routines in C for an RFID RF Immunity testing program.
- **Dr. Andre Marziali's Biophysics Lab** UBC
NSERC Research Engineer May 2000 - Aug. 2000
 - Developed novel technology for thermal cycling of DNA samples in sub-micro litre volumes.

- Designed mechanical and electrical components for a 384-sample prototype system.
- Wrote control software/drivers in LabVIEW for the gantry robot and plate stacker.
- Built three prototypes for a 384 hole aluminium thermal cycling block.

• **Nortel Networks, OPTera Solutions, Photonic Group**

Kanata, ON

Research Engineer

Jan. 1999 - Apr. 1999

- Designed a new method of measuring thermal and adiabatic chirp in 1.25/2.5 GHz Lasers. This new method has now been patented by my supervisor Kihong Kim (U.S. patent # 6,178,001).
- Tested and characterized laser diodes, DWDM filters, and Mach-Zehnder Interferometers
- Programmed automated DC Laser Testing and Mach-Zehnder Interferometer data acquisition and analysis programs using LabVIEW (over GPIB).
- Constructed Mach-Zehnder Interferometers using bare fibre spliced together, and characterized them.
- Was responsible for all lab testing routines involving lasers, filters, and interferometers.

School Projects

• **SpectraVu Medical**

Vancouver, BC

Engineering Physics Project Lab, APSC 479

Sep. 2001 - Apr. 2002

- Designed and implemented a digital video processing system for lung cancer imaging,
- Selected components (video DAC, ADC) and created schematics in OrCAD.
- Implemented image processing functions and data control blocks in VHDL using an Altera ACEK1K FPGA. Learned VHDL and MAX+PlusII development tool on my own time.

• **Analog Circuit Design and MOSFET Device Design**

Semiconductor Devices Course, EECE 480

Sep. 2001 - Apr. 2002

- Designed a high-frequency cascode amplifier, simulated it using HSPICE, and did layout using Cadence Virtuoso Layout software. Manufactured on a Gennum GA911 chip.
- Designed and simulated a deep sub-micron (70 nm channel) MOSFET using MEDICI.

• **Low-cost Optoelectronic Localizer**

Engineering Physics Project Lab, APSC 459

Sep. 2000 - Apr. 2001

- Worked on the LoCOL (Low-cost Optoelectronic Localizer) project in a team of three.
- Programmed a PIC microcontroller to control the timing of the three CCD cameras.
- Designed power supply and re-built electrical circuits for the CCD sensors, processors.

• **Other Projects**

UBC and at home

1999-2000

- Designed and debugged a digital voltmeter using a Motorola 68000 processor.
- Added features to the digital voltmeter including scrolling text, and a warning buzzer, which won 3rd place in the IEEE Voltmeter Competition.
- Constructed and debugged a digital clock on a PCB for PHYS 159.
- Built an AM short-wave radio at home, on a 2" × 2.5" piece of breadboard.

Awards

Faculty of Engineering Scholarship (\$2,300)	2002
Ontario Graduate Scholarship (OGS) (\$15,000)	2002-2003
Industrial NSERC Undergraduate Research Award (\$4500)	2002
UBC OSI (Outstanding Student Initiative) Entrance Scholarship (\$10,000)	1997-2002
Engineering Physics 50th Anniversary Scholarship (\$600)	2001
Anne. M. Mack Scholarship (\$500)	2001
NSERC Undergraduate Student Research Award (\$4000)	2000
United Food and Commercial Workers Union, Local 1518 Scholarship (\$1000)	1998
Top Senior Math Student Award	1997
B.C. Provincial Exam Scholarship (\$1000)	1997
B.C. Government Passport to Education (\$800)	1997
James Whiteside Elementary Parent Advisory Committee Award (\$200)	1997

Skills

Languages: C/C++, \LaTeX , Java, SPICE, MEDICI (TCAD), VHDL/VHDL-AMS, 68000 and PIC Assembly

Operating Systems: Linux (Debian), Solaris, UNIX, MacOS X, Windows 95/98/NT/2000/XP

Applications: Mathematica, MatLab, GNU Octave, LabVIEW, Cadence, \LaTeX , OpenOffice, MS Office XP, OrCAD schematic capture & PCB layout, Altera MAX+PlusII VHDL FPGA Design

Lab Skills: Digital/Analog Scopes, Spectrum Analyzer, Function Generators

Fab Skills: PECVD and sputtering deposition, UV lithography, wet etch, dry etch (RIE), mask aligner, step profiler, ellipsometry, infrared spectroscopy, x-ray diffraction

Miscellaneous: software configuration management, strong verbal and written communication skills, excellent troubleshooting and debugging skills, exceptional problem solving skills, good teams skills

Interests

Academic: Solid state devices, nanotechnology, photonics, microcontrollers, RF/wireless

Sports: Playing hockey and swimming

Computers: Currently maintain two official Debian Linux packages, Mozilla beta tester, enjoy using and learning Linux systems, Building electronics projects at home, and writing JAVA software

Musical: Playing guitar and piano

Membership: Student member of IEEE since 1998, Materials Research Society member since 2002

Other: Reading novels