Jerin Roberts

Curriculum Vitae

Education

Expected-April,2015 **Bachelors of Science**, *Thompson Rivers University*, Kamloops, *GPA – 3.6*.
Major Physics

Experience

Fall 2014 –Present **Undergraduate Research Assistant**, TRIUMF, Vancouver, BC.
Aiding in the development of the M9 Prototype Muon Spectrometer
Detailed achievements:
- Designing Experimental Apparatus Equipment using Solidworks for SiPM tests
- Characterizing and Analyzing SiPMs for final selection
- Designed Positron Timing Simulation (C++/ROOT)
- Designed scripts for Pulse Detection and Characterization from SiPM's (C++/ROOT)

Summer 2014 **Undergraduate Research Assistant**, SNOLAB, Sudbury, Ontario.
Fixed the umbilical retrieval mechanism (URM) for SNO+ experiment key for lowering sources into the detector.
Detailed achievements:
- Assisted PMT assembly in class 2000 and 5000 underground clean labs
- Designed and implemented chain drive system vastly improving performance
- Re-Designed/fabricated Pulley Wheels using FreeCAD/3D printer
- FEM analysis using Z88 Aurora to verify pulley integrity

2012–Present **Laboratory Instructor**, Thompson Rivers University, Kamloops, BC.
Lead and taught 1st year Physics Labs
Detailed achievements:
- Preparing and Presenting Lectures for Laboratory Course
- Instructing students on how to perform experiments
- Working quickly to provide valuable solutions for student questions
- Marking and grading assignments and exams

Awards

2013 Undergraduate Research Experience Award Program (UREAP)

Computer skills

Languages C/C++, LaTeX, Bash (Linux), Assembly, R

OS/Programs Ubuntu 14.04, Scientific Linux, Microsoft Windows, FreeCAD, Solidworks, Eagle CAD, Texmaker, Labview, Z88Aurora

2165 westsyde Rd. – Kamloops, BC v2v7c3
(250) 682 6536 • ☎ (250) 318 0687 • ✉ robertsj@snolab.ca

Devices	Arduino, Altera FPGA, Raspberry pi, Newport Stepper Motors/Drivers, Tektronix (tekVISA), PICkit 2

Volunteer Work

2010-Present	Physics Help Center hosted by Phi-6 Club (current member)
2012-2014	Physics Magic Show Presentation
2012-2013	Open House Science Night Presenter

Hobbies and Interests

- RC Helicopters/Aircraft
- DH Biking
- Model Rocketry
- Flight Simulation

References

Dr. Syd Kreitzman, TRIUMF, Research Scientist MuSR.
syd@triumf.ca
604-222-7303

Dr. Christine Kraus, SNOLAB, Canada Research Chair in Particle Astrophysics.
tine@snolab.ca
705-561-8413

Dr. Mark Paetkau, TRU, Professor Physical Sciences.
mpaetkau@tru.ca
250-828-5453

Office of Admissions
Simon Fraser University
8888 University Drive
V5A 1S6 Burnaby, B.C.

January 26, 2015

Dear Sir or Madam,

My Goal is to become a student within the prestigious institution of Simon Fraser University, while learning and gaining experience for my future goal of pursuing a career in Engineering. Given my educational background and experience will allow me to be an asset to your organization.

Since Fall 2014 I have been involved in the development of the M9 prototype beamline spectrometer currently being designed and built at TRIUMF. Under the supervision of Dr. Syd Kreitzman, I designed multi-applicable equipment used for testing specific experimental components, which involved generating professional drawings for the on-site machine shop using Solidworks. I also designed from scratch a sophisticated simulation in C++/ROOT used to help determine the possible resolution of the new spectrometer given different geometrical configurations for scintillation pieces. In Addition I wrote scripts to detect and characterize pulses during SiPM characterization phases in C++/ROOT. The project has enabled me to refine my engineering and programming abilities which will be an asset to the engineering science program.

Summer 2014 I worked for SNOLAB under the supervision of Dr. Christine Kraus on the SNO+ experiment. During my term I spent a great deal of time engineering mechanical systems for the project. Specifically I cleverly fixed the slippage issues plaguing the umbilical retrieval mechanisms (URM's), a device responsible for lowering radioactive sources into the multi-million dollar detector. In addition to redesigning high-traction pulleys, I also designed and fabricated a chain-drive system which successfully met budget, space and radioactivity requirements. My time with SNOLAB has given me a great mechanical intuitiveness that I believe combined with my research experience and knowledge of physics will give me an advantage in engineering science.

I have completed a number of projects involving delicate, technical design and precise assembly. For a directed studies project I designed and professionally constructed operational sensors for a high altitude balloon using a LPKF circuit milling machine and Eagle CAD drafting software. The circuits included a 900MHz 1W transmitter/reciever, GPS telemetry APRS transmitter, a cosmic radiation detector, accelerometer and atmospheric sensors all designed as Arduino shields. The Project required a great deal of electronic design and debugging. This experience combined with my education and hardworking nature will be valued in engineering science.

I hope to hear from you soon to discuss how I can become a valued member of your institution. I look forward to starting my engineering career, as well as pursuing opportunities for professional development and advancement within Simon Fraser University. Thank you for your kind consideration of my qualifications.

Sincerely yours,

Jerin Roberts

Attached: curriculum vitæ