

## FRANK V. MARCOLINE

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### Education

M.S., Physics, University of Washington, Seattle, WA 2003  
Sc.B., Physics, Massachusetts Institute of Technology, Cambridge, MA 1995

### Work Experience

Grabe Lab, University of Pittsburgh  
Software Engineer 2011-2013  
Continued development of APBSmem, the Lab's open source software for electrostatic calculations in the membrane.  
Maintained software website and provided user support. Assisted in lab storage server support.  
Assisted with numerical and analytic electrostatic computations in solution and membrane settings.

Sheena Aurora, M.D., Swedish Medical Center, Seattle, WA  
Contractor 2007-2009  
Set up hardware to record motor activation via electromyography, when triggered by transcranial magnetic stimulation (TMS).  
Upgraded legacy experimental hardware and software for migraine studies which record patient verbal responses to visual stimuli during TMS.  
Programmed new experiment files and stimuli for future TMS studies.

Earth and Ocean Sciences Department, University of British Columbia  
Consultant 2006  
Provided a C software solution for archiving experimental data. The software converts raw, error prone data logged from arrays of hydrogeological sensors into minimally processed, error free archives.  
Provided a flexible system to convert archival data into calibrated physical data.  
Provided additional Matlab consulting for data analysis and visualization.

CENPA, University of Washington  
Research Assistant 2003-2006  
Built an electronic test platform to study the magnetic properties of materials. Machined, processed, and analysed magnet samples for use in experiments to search for new short-range fundamental forces.  
Wrote software to calculate novel theoretical forces between macroscopic objects using multipole expansion methods.  
Aided in CAD design, numerical simulation, construction and testing of test bodies for short-range force experiments.

Space Sciences Laboratory, University of California, Berkeley  
Staff Research Associate 1995-2000  
Wrote presentation and analysis tools for Wind spacecraft 3DP solar wind data.  
Performed statistical studies of interplanetary plasma shocks and discontinuities.  
Developed a method for remote sensing of the lunar plasma wake structure.  
Aided in design and simulation of instrumentation for future spacecraft missions.

Center for Space Research, Massachusetts Institute of Technology  
Research Staff

1994–1995

Developed new operational modes for the SWE instruments onboard the Wind spacecraft to increase the time resolution of the SWE solar wind data by a factor of fifteen.

Wrote data processing and visualization tools for Wind spacecraft SWE data.

Analyzed SWE Faraday Cup Sensor instrumental effects to improve data production.

Bates Linear Accelerator, Massachusetts Institute of Technology  
Student Research Assistant

1997

Coded a driver for an array of magnetic coils used to steer the electron beam. Wrote software to optimize the focus and targeting of the electron beam for the M.I.T./Caltech project SAMPLE.

### **Teaching**

University of Washington

2001-2002

General Physics – Laboratory Instructor

Introduction to Space Physics – Lecturer

### **Skills**

Programming: C, Java, lisp, fortran, unix shell scripts, Mathematica, Matlab, IDL.

Operating systems: Comfortable in Windows and unix-like environments.