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Curriculum Vitae

Personal:

Name:	Frederick G.M. Roeber
Date of Birth:	28/11/67
Citizenship:	United States of America
Health:	Excellent
Marital status:	Single
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Education:

BS Physics, California Institute of Technology, 1990. My senior year research with the High Energy Physics group (L3 experiment) involved the writing of software for the symbolic solution of Feynman diagrams.

Honors Graduate, Mead Senior High School, Spokane WA USA.

Work experience:

June 1990 – Present:
Caltech staff scientist, consulting for the CERN SPS/LEP Controls Group.

- Designed and implemented several large, distributed software systems used in the control of the LEP and SPS accelerators.
- Measured, analyzed and correlated LEP accelerator data for operations, instrumentation, and controls personnel.
- Designed and implemented software for the control of equipment in a real–time environment.
- Provided general consultation, problem solving and troubleshooting for SL personnel.

September 1986 – June 1990 (during academic year):
Caltech, Undergraduate Teaching Assistant, Ph 20, Ph 21, and Ph 22.

- These three laboratory courses focused on the development and use of numerical methods for the solution of symbolically intractable problems in physics. Though nominally a "teaching assistant," I effectively taught my section of the course.

Academic Summer 1989:
Caltech, Summer Undergraduate Research Fellowship, with the High Energy Physics group (L3 experiment).

- Completed the design of the high energy beam transport begun the previous year (see below). This design was optimized for multiple operating regimes, and included an analysis of the accuracies and sensitivities involved in the equipment positioning.

Academic Summer 1988:
Caltech, Summer Undergraduate Research Fellowship, with the High Energy Physics group (L3 experiment).

- Ported and evaluated several particle beam transport simulation packages.

- Wrote my own particle beam transport simulation package, which included all facilities needed for the RFQ calibration system high energy beam transport design and optimization.
- Began the design of the RFQ calibration system high energy beam transport design.

Academic Summer 1987:
Caltech, Summer Undergraduate Research Fellowship, with the High Energy Physics group (L3 experiment).

- Measured short–term radiation damage in bismuth–germanium–oxide (BGO) scintillator crystals as a function of dosage and penetration depth, for comparison with theoretical models.
- Redesigned the RFQ calibration system lithium target for minimal nuclear background and greater durability.

September 1987 – June 1990 (during academic year):
Caltech, undergraduate student. As part of, and in addition to, my undergraduate studies in physics, I worked with the Caltech High Energy Physics group (L3 experiment).

- Contributed to the RFQ calibration system design.
- Installed, administered, and maintained the Caltech HEP computer infrastructure.

Academic Summer 1984:
As part of the Rickover Science Institute, I worked with the US Navy's Naval Surface Weapons Center, in Robotics Research and Development.

- Designed and wrote software to support hand–eye coordination in a simulated robotic arm.

Publications:

- Billen, R., et. al. : "LEP accelerator logging system using on–line database," CERN SL/93–42 (CO), presented at the 4th International conference on accelerator and large experimental physics control systems – ICALEPCS '93, Berlin, Germany 18–22 Oct 1993.
- Roeber, Frederick : "The SL Error System software user manual," CERN SL/93–101, CERN, Geneva, Switzerland, January, 1994.
- Roeber, Frederick : "The design of the L3 BGO EM calorimeter RFQ calibration system high energy beam transport & focusing systems, and gas cell neutralizer," California Institute of Technology Summer Undergraduate Research Fellowship report, Caltech, Pasadena, California, October, 1989.
- Roeber, Frederick : "Calibration of the L3 detector BGO array at LEP, CERN," California Institute of Technology Summer Undergraduate Research Fellowship report, Caltech, Pasadena, California, October, 1988.
- Ma, Hong, et. al. : "Calibration of the L3 BGO electromagnetic calorimeter with a radiofrequency quadrupole accelerator," CALT 68–1497, Caltech, Pasadena, California, June 1988.
- Roeber, Frederick : "Study on the radiation damage of BGO crystals, and a new target design for the L3 BGO calibration system," California Institute of Technology Summer Undergraduate Research Fellowship report, Caltech, Pasadena, California, October, 1987.

Particular skills:

- Extensive knowledge of unix operating systems.
- Design of distributed, object–oriented, and real–time systems and applications.
- Extensive knowledge of the internet and world–wide–web.
- Numerical methods for problem analysis and solution.
- C, C++, FORTRAN, Pascal
- Unix (SunOS, HP–UX, OSF/1, Ultrix, LynxOS, Xenix, BSD, System V),
  VMS,
  Apollo Domain;
- Oracle, including Pro*C, SQL*Plus, PL/SQL, schemas, and general design.
- X Window System, particularly X servers.