

CURRICULUM VITAE  
**William Louis Bahn**

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13199 Andiron Way  
Larkspur, CO 80118-6612  
(719) 481-2099  
[wbahn@bfe.com](mailto:wbahn@bfe.com)  
Citizenship: United States

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**Academic Credentials**

**Degrees in Progress**

*Doctor of Philosophy*, Electrical Engineering      University of Colorado, Colorado Springs – 2010

*Master of Science*, Computer Science              University of Colorado, Colorado Springs – 2010

**Conferred Degrees**

*Master of Engineering*, Engineering Systems              Colorado School of Mines – 2004

Work interrupted in 1995 and completed in 2004

GPA: 3.12/4.00 (due to two incompletes that changed to F's, 3.74 otherwise)

Honors:    Recipient - 1992-93 Boettcher Graduate Fellowship

                 Honorable Mention - National Science Foundation Graduate Fellowship

                 Honorable Mention - Department of Defense Graduate Fellowship

*Bachelor of Science*, Engineering Physics              Colorado School of Mines – 1991

Strong minor in Electronic Instrumentation

GPA: 3.80/4.00

Honors:    Graduated with High Academic Honors

                 Academic Dean's List (seven of eight semesters with three 4.0's)

                 Tau Beta Pi, Sigma Pi Sigma honor societies.

                 1991 Physics Department Engineer's Day Engineer

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**Teaching Experience**

**United States Air Force Academy – Jan 06 / May 07**

**Instructor of Computer Science**

Teach the core CS110 - Introduction to Computing course.

Involved with course development to improve the CS110 course.

Research Assistant in the Academy Center for Information Security (ACIS).

**Awards**

2007 Computer Science Outstanding Researcher Award

Joint award: Leemon C. Baird, III; William L. Bahn; and Michael D. Collins.

**Teaching Experience (cont'd)**

**University of Colorado at Colorado Springs – Aug 00 / May 08**

**Honoraria Instructor**

Taught both the introductory C and the second semester electronics courses.  
Performed course development for both courses.  
Provided course coordination and oversight for two other C instructors.

**Awards**

2003 College of Engineering and Applied Science Part-Time Instructor of the Year

**Colorado School of Mines – May 93 / Aug 95**

**Adjunct Instructor of Engineering**

Coordinated the Capstone Senior Design Program.  
Taught the Control Systems laboratory course.  
Taught the introductory electronic and linear systems course.  
Developed, implemented, and instructed the Motor Control module of the Data Acquisition and Control segment of Summer Field Session.

**Colorado School of Mines – Aug 91 / May 93**

**Graduate Teaching Assistant**

Taught the control systems laboratory course.  
Assisted with the Advanced Digital Electronics laboratory course.  
Conceived, designed, and implemented digital motor control stations and developed the accompanying undergraduate lab exercises and manuals for them.  
Consulted with undergraduate students enrolled in Capstone Senior Design.

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**Employment (non-academic)**

**Academy Center for Cyberspace Research (ACCR) - USAFA, CO – May 06 / Present**

**Senior Research Scientist**

Perform basic and applied research in the area of unkeyed jam resistant communication based on the concurrent coding theory.

Co-developer of concurrent coding theory and the BBC codec algorithms based upon it.

Responsible for all aspects of ACCR participation in counter-UAV exercises at Naval Air Weapons Station China Lake in 2008, 2009, and 2010. This included design of experiments, hardware and software implementation, integration of hardware in the UAV, data collection and analysis, and final report.

**Black Forest Engineering, LLC - Colorado Springs, CO – May 95 / Oct 08**

**Senior Engineer**

Provide end-to-end design services for full custom mixed-signal ASICs including budgeting, circuit design and simulation, IC layout and verification, foundry submission, and testing.

Most projects involved the design of Read-Out IC's for detector arrays. Targeted energy levels have ranged from deep infrared to high energy gamma. Some designs have been data-driven and fully asynchronous. Detector types have included integrated photodiodes, hybrid MEMs devices, and external scintillator, photomultiplier, and avalanche photodiode arrays. Operating temperatures have varied from liquid nitrogen to slightly elevated oven-stabilized designs.

**Dynasys Technical Services - Colorado Springs, CO – May 91 / Present**

**Sole Proprietor**

Side-line business providing services such as proof-of-concept prototypes and small system design primarily in the electronic/electromechanical fields.

Projects have included:

- Radon Level Monitor for Safe-Air Monitoring Systems, Inc.
- Servocylinder hoist and multiplexing system for N.I.S.T.
- Blow-Down Combustion Bomb firing and control circuits for C.S.M.

**Colorado School of Mines Foundation - Golden, CO – Sep 92 / Oct 93**

**Graduate Supervisor**

Supervised the Mines Annual Fund Phone-a-thon program intended to secure gifts from CSM alumni, parents, and friends on behalf of the Colorado School of Mines. Was responsible for total of forty-five undergraduate callers and six undergraduate supervisors. Developed database management software to monitor program performance and prepare daily, weekly and cumulative reports.

**National Institute of Standards and Technology (N.I.S.T.) - Boulder, CO – May 88 / Jul 91**

**Engineering Student Trainee**

Assisted Institute scientists in the development, design, implementation and analysis of research efforts relating to electromechanical effects in superconductors. Was responsible for the design and fabrication of two measurement systems.

**Department of Physics - Colorado School of Mines - Golden, CO – Jan 89 / May 91**

**Senior Design**

Developed a critical current measurement facility for bulk and thin film high-temperature superconductors.

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**Laboratory Assistant**

Designed, fabricated, and tested the support structure for a high field superconducting magnet system including cryogen transport, magnet power leads, and electronic instrumentation.

**United States Air Force - 325 CRS, Tyndall AFB, FL – Jun 85 / Apr 87**

**F-15 Pneudraulics Specialist**

Performed troubleshooting, repair, and check-out of hydraulic/pneumatic systems and components on F-15 and T-33 plus various transient aircraft types.

**Awards and Decorations:**

Honorable Discharge  
Foreign Object Damage Prevention Award  
Technical School Honor Graduate  
Expert Marksman, M-16

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**Publications**

Baird, Leemon C. III Carlisle, Martin C. & Bahn, William L. (2010) *Unkeyed Jam Resistance 200 Times Faster: The Inchworm Hash*, Accepted, 2010 IEEE Military Communications Conference (MILCOM10), San Jose, California, October 31-November 3.

Baird, Leemon C. III, Schwietzer, Dino, Bahn, William L. & Sambasivam, Samuel (2010) *Visual Concurrent Codes*, Issues in Informing Science and Information Technology Education (InSITE), Volume 7, pp 494-507.

Baird, Leemon C. III & Bahn, William L. (2009) *An  $O(\log n)$  Running Median or Running Statistic Method, for Use with BBC Jam Resistance*, Technical Report, U. S. Air Force Academy, Academy Center for Cyberspace Research, USAFA-TR-2009-ACCR-03, Nov.

Baird, Leemon C. III & Bahn, William L. (2009) *An Efficient Correlator for Implementations of BBC Jam Resistance, Technical Report*, U. S. Air Force Academy, Academy Center for Cyberspace Research, USAFA-TR-2009-ACCR-02, Nov.

Baird, Leemon C. III & Bahn, William L. (2009) *Parallel BBC Decoding With Little Interprocess Communication, Technical Report*, U. S. Air Force Academy, Academy Center for Cyberspace Research, USAFA-TR-2009-ACCR-01, Nov.

Bahn, William L., Baird, Leemon C. III & Collins, Michael, D. (2008) *Oscillator mismatch and jitter compensation in concurrent codecs*, IEEE Military Communication Conference (MILCOM08), San Diego, CA, Nov 17-19.

Bahn, William L., Baird, Leemon C. III & Collins, Michael, D. (2008) *Jam resistant communications without shared secrets*, Proceedings of the 3rd International Conference on Information Warfare and Security (ICIW08), Omaha, Nebraska, April 24-25.

Bahn, William L. & Baird, Leemon C. III (2008) *Hardware-Centric Implementation Considerations for BBC-Based Concurrent Codecs*, Technical Report, U. S. Air Force Academy, Academy Center for Cyberspace Research, USAFA-TR-2008-ACCR-03, Dec 8.

Bahn, William L. & Baird, Leemon C. III (2008) *Extending Critical Mark Densities in Concurrent Codecs Through the Use of Interstitial Checksum Bits*, Technical Report, U. S. Air Force Academy, Academy Center for Cyberspace Research, USAFA-TR-2008-ACCR-02, Dec 8.

Baird, Leemon C. III & Bahn, William L. (2008) *Security Analysis of BBC Coding*, Technical Report, U. S. Air Force Academy, Academy Center for Cyberspace Research, USAFA-TR-2008-ACCR-01, Dec 8.

Schweitzer, Dino, Baird, Leemon C. III & Bahn, William (2007) *Visually understanding jam resistant communication*, Proceedings of the 3rd International Workshop on Visualization for Computer Security, Oct 29, pages 175-186.

Baird, Leemon C. III, Bahn, William L., Collins, Michael D., Carlisle, Martin C. & Butler, Sean (2007) *Keyless jam resistance*, Proceedings of the 8th Annual IEEE SMC Information Assurance Workshop (IAW), Orlando, Florida, June 20-22, pages 143-150.

Bahn, William L. & Baird, Leemon C. III (2007) *Impediments to systems thinking: Communities separated by a common language*, Proceedings of the 4th International Conference on Cybernetics and Information (CITSA), Orlando, Florida, July 12-15, pages 122-127.

Baird, Leemon C. III, Bahn, William L. & Collins, Michael D. (2007) *Jam-Resistant Communication Without Shared Secrets Through the Use of Concurrent Codes*, Technical Report, U. S. Air Force Academy, USAFA-TR-2007-01, Feb 14.

Bahn, William L., Baird, Leemon C. III & Collins, Michael D. (2007) *The use of concurrent codes in computer programming and digital signal processing education*, Journal of Computing Sciences in College, 23:1, Oct, pages 174-180, (also in the Proceedings of the 16th Annual Rocky Mountain Conference of the Consortium for Computing Sciences in Colleges (RMCCSC), Orem Utah).

Steele, John P.H., Bahn, William L., Arit, Ismail & Ganesh, Chidambar (1996) *An Intensive Instrumentation and Computer Data Acquisition Laboratory*, ASEE Computers in Education Journal.

Bahn, William L., Carrick, Jonathan R. & Huttelmaier, H.P. (1992) *A Comparison of Ski Lift Brake Testing Strategies - Static vs. Dynamic*, Presented at the International Organization for

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Transportation by Rope - North American Continental Section (OITAF-NACS) Conference (Steamboat Springs, CO). Published in Conference Proceedings.

Ekin, Jack W., Bray, Steven L. & Bahn, William L. (1991) *Effect of Transverse Stress on the Critical Current of Bronze-process and Internal-tin Nb<sub>3</sub>Sn*, , **J. Appl. Phys.**, **69** (8), 15 April.

Bahn, William L., Ekin, Jack W. & Bray, Steven L. (1990) *Fracture Strain Measurements on High-T<sub>c</sub> Thin Film Substrate Materials at 76K*, Presented at the Applied Superconductivity Conference (Snowmass, CO) by J.W. Ekin.

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**References**

**LtCol Leemon Baird, USAF (Ret)**

Senior Research Scientist  
Academy Center for Cyberspace Research, USAFA/DFCS  
2354 Fairchild Drive  
USAF Academy, CO 80840  
(719) 659-8181

**Dr. Stephen Gaalema**

President  
Black Forest Engineering, LLC  
9348 Grand Cordera, Suite 200  
Colorado Springs, CO 80920  
(719) 593-9501 x100

**Dr. Dan Dandapani**

Dean – College of Engineering and Applied Science  
University of Colorado, Colorado Springs  
Colorado Springs, CO 80918  
(719) 255-3551