Elijah Berger

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Summary

Seeking Experience Full-time engineering position in design of power electronics, medical devices, or scientific equipment
Resonant power converters, design for manufacture, design for test

Education

Master of Science in Electrical and Computer Engineering, GPA: 3.91/4.0 — *Expected June 2026*

University of Wisconsin - Madison

- Advisor: Professor Daniel C. Ludois
- *Relevant coursework*: power electronics, solid-state power conversion, discrete-time controls, computational electromagnetics

Bachelor of Arts in Physics, *magna cum laude*, GPA: 3.92/4.0 — *May 2021*

Bowdoin College — *Brunswick, ME*

- Studied with a focus on physical modeling and climate dynamics
- *Relevant coursework*: solid-state electronics, computational physics, statistical physics (thermodynamics)

Professional Experience

Prodrive Technologies (high-performance electronics firm) - 3 years of experience — *Canton, MA*

Process Manager - Service — *Mar. 2022 – Aug. 2024*

- Steered the department through a factory-wide transition to full production capacity
- Mentored four new engineers in lab skills, live measurements, and root cause analysis techniques
- Initiated an in-house training and certification program for rework soldering to IPC-7711/21 standards

Systems Analysis Engineer — *Sep. 2021 – Aug. 2024*

- Reverse engineered hundreds of failures and proposed improvements in product design and component selection
- Designed custom test circuits and a Python/CANopen application to troubleshoot defective products
- Coordinated multidisciplinary investigations to eliminate systemic quality issues

Research and Teaching Experience

Wisconsin Electric Machines and Power Electronics Consortium (WEMPEC) — *UW-Madison*

Graduate Research Assistant — *Aug. 2024 – Present*

Class-E amplifier and controls for HF-band communications (under IARPA EQuAL-P project)

- Designing and testing a >10 Watt class-E amplifier using 650 V GaN for 10 MHz carrier frequency
- Researching and fabricating MHz-bandwidth current sensors, verifying performance with oscilloscope measurements
- Implementing closed-loop envelope control for a soft-switching radio amplifier in analog hardware

Design and PCB layout of 6.78 MHz resonant full bridge inverter with 100 V GaN

- Achieved >100 W output at 97% efficiency, and soft switching up to 10 MHz with 5.1 ns dead-time
- The research group is using this design for projects including capacitive power transfer and dielectric heating
- Utilizing system identification techniques to model thermal behavior and novel electrochemical load impedances

Physics Department, Bowdoin College — *Brunswick, ME*

Learning Assistant — *Feb. 2018 – May 2021*

- Led groups of 5-10 students in weekly collaborative problem solving sessions
- Provided personalized feedback and held office hours for students in Electric Fields and Circuits and Statistical Physics

Awards & Honors

Sarah and James Bowdoin Scholar, Bowdoin College (Dean's List) — *2018, 2019*

Noel C. Little Prize in Experimental Physics, Physics Department of Bowdoin College — *May 2021*

Phi Beta Kappa, Alpha of Maine Chapter — *May 2021*

Other Work Experience

Sail Sand Point *Seattle, WA*

Open Boating Instructor *Summers 2019, 2021*

- Developed lesson plans and taught adult learn-to-sail programs in group and private sessions
- Facilitated community outreach events for the YMCA, Outdoors for All, and other organizations

Maintenance Assistant *Summers 2017, 2018*

- Operated independently on complex projects including dock maintenance and fiberglass repair
- Devised solutions to return boats to service, such as replacement transoms and rigging fabrication

Certifications

IPC-7711/7721 Rework, Modification, and Repair: Certified Trainer, EPTAC LLC, *Manchester, NH* *Apr. 2023, exp. Apr. 2025*

IPC-A-610 Acceptability of Electronic Assemblies: Certified Trainer, EPTAC LLC, *Manchester, NH* *Oct. 2023, exp. Oct. 2025*

Skills

Professional skills	8D & team-based problem solving, technical writing, process engineering, mentorship
Electronics	Power conversion, analog controls, sensing circuits, failure analysis, magnetics design
Lab skills	Production test design, high-frequency probing, soldering, thermal measurements
Software	Python, SPICE, MATLAB/Simulink, Altium, CANopen, Excel
Equipment	Oscilloscope, impedance analyzer, multimeter, function generator, Hipot tester
Languages	English (native speaker), Spanish (intermediate)

Activities & Interests

Cooking
Ultimate frisbee
Hiking & camping
Sailing
Vintage electrical test equipment