

DMITRIY PAUTOV

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Physics and Electrical Engineering Student at UIUC with experience in research and engineering. Primary Interests are ultra-precise measurement systems and semiconductor physics.

Skills:

Design & Simulation: SolidWorks, Fusion 360, LTspice, COMSOL, Siemens Expedition, KiCAD

Electronics: Analog & Digital Circuit Design, RF & High-Precision Test Equipment, LABVIEW

Programming & Tools: C, C++, Python, NumPy, SciPy, matplotlib, Bash, Linux, LaTeX, STM32CubeIDE, KiCAD

Fabrication & Machining: Manual Mill, Manual Lathe, 3D Printing (SLA, FDM, SLS)

Education:

University of Illinois Urbana-Champaign | 4.00 GPA | Expected May 2027 |

Physics, B.S. and Electrical Engineering, B.S.

Experience:

SpaceX | Starlink Electrical Intern | Bastrop, TX | Apr 2025 – Present

- Modeled GPS coverage using Python, NumPy, and SciPy; redesigned Starlink gateway clocking to support Rubidium GPSDOs and cesium clocks, increasing coverage by 20% in GPS-denied environments.
- Designed and built automated precision test systems for ppb-level frequency drift analysis.
- Designed ultra-low-jitter clocking hardware and PCB layouts using Siemens Expedition, programmed custom STM microcontrollers in C++, and validated RF systems for functionality and FCC EMI/EMC compliance.

Northwestern University, Gabrielse Group | Physics Research Assistant | Evanston, IL | Jun 2023 – Aug 2023

- Designed an RF limiter operating at 40 GHz, controlling electron oscillation for magnetic moment measurement.
- Achieved <1Hz DSP-based bandpass filter, tripled sampling speed, increased resolution to 16 bits, and boosted FFT computation by 8×: dramatically enhancing stability and electron lifetime.
- Designed a custom signal processing PCB based on the STM32H7 microcontroller, incorporating 100BASE-T Ethernet, USB-C, and an LCD interface to optimize future experimental workflows. Developed an embedded data logger and real-time visualization tool using Python and PyQt with live plotting capabilities.
- Built a custom LABVIEW interface to monitor cryostat temperature in real time and actively control helium pressure for precise cryogenic system management.

UIUC EV Concept Car | Project Lead | Urbana, IL | Aug 2024 – Present

- Designed a 30 A overcurrent protection board with bidirectional fault blocking and built a 3 kW, 48 V 3-phase motor controller with regenerative braking, replacing a brushed DC motor and increasing efficiency by 6%.
- Programmed STM32 microcontrollers in C++ to control motor phase timing with sub-5 µs precision and integrated safe failure modes; implemented CAN bus communication, and designed and tested KiCAD PCBs rated for over 60 A peak current, helped design & make custom 13s5p welded 18650 Li-ion battery stacks.
- Managed a cross-functional team of five engineers. Conducted technical training workshops, authored design documentation, and awarded runner-up for Carbon Footprint Reduction at Shell Eco-Marathon.

UIUC | CS124 Tutor | Urbana, IL | Jan 2025 - May 2025

- Tutored 30+ students in Java/OOP fundamentals. Created learning tools adopted in the Spring 2025 curriculum.

Selected Projects

Discrete 500MHz RF Amplifier

- Designed and built a 3-stage BJT-based RF amplifier on copper-clad, achieving a flat +10 dB gain up to 500 MHz.
- Tuned amplifier using spectrum analyzer and VNA, optimizing biasing and stability across the full band.

PM2534 Repair and Voltage Reference Upgrade

- Diagnosed, repaired, and analyzed a non-functioning PM2534 6.5-digit multimeter, repairing the integrator.
- Replaced voltage reference with custom LM399-based board, with <3ppm/°C tempco and good stability.