Dmitriy Pautov

dpautov.com | dmitriy.pautov138@gmail.com | 847-505-2215

Physics and Electrical Engineering student at UIUC with a primary focus on RF systems and precision metrology.

SKILLS

Technical: Solidworks, Fusion 360, Analog & Digital Circuit Design, LTspice, KiCAD, LaTeX, Siemens Expedition, RF & High Precision Test Equipment, COMSOL, Manual Milling, Manual Lathe

Programming: STM32CubeIDE, C, C++, LABVIEW, Python, NumPy, SciPy, matplotlib

EXPERIENCE

SpaceX | Starlink Electrical Intern | Bastrop, TX | May 2025 – Aug 2025

- Re-designed the clocking and synchronization scheme for Starlink gateways by replacing distributed GPSDOs with a centralized cesium atomic clock, improving reliability in GPS-denied environments.
- Assisted in developing and characterizing a proprietary traveling-wave tube amplifier (TWTA) for high-power RF applications in the SHF (X & Ku bands).
- Programmed custom microcontrollers in C++, worked with custom RFICs, designed PCBs using Siemens Expedition, and performed validation using spectrum analyzers, VNAs, oscilloscopes, and thermal chambers.

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

- Modernized 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.
- Engineered a custom signal processing PCB using an STM32H7 microcontroller, integrating high-speed Ethernet, USB-C, and an LCD interface to streamline future experimental workflows.
- Designed, manufactured, assembled, and tested components for cryogenic and ultra-high-vacuum systems.

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

- Designed overcurrent protection board triggering at 30A with bidirectional blocking under fault conditions.
- Designed and built a 3-phase motor controller for a 3 kW, 48 V motor, implementing regenerative braking.
- Programmed STM32 microcontrollers in STM32CubeIDE, integrated CAN bus, led PCB design in KiCAD, and worked with high-power test equipment, including power analyzers and Li-ion battery systems.
- Led a 5-person team to provide hands-on experience, completed projects, and taught workshops.

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

- Provided one-on-one and group support to help students master Java and OOP, while creating and refining course materials like video explanations and learning resources.

PROJECTS

Discrete 500MHz RF Amplifier

- Designed, built, & tuned a 3-stage, BJT-based RF Amplifier on Copper Clad, with a flat +10dB up to 500MHz.

PM2534 Repair and Voltage Reference Upgrade

- Repaired & Analyzed a broken PM2534 (6.5-digit DMM). Upgraded the voltage reference for greater stability.

Systron Donner 6053 Frequency Counter: Repair, Teardown, & Theory https://dpautov.com/pages/sd6053

- Repaired & Analyzed a broken Systron Donner 6053 microwave frequency counter.

EDUCATION

University of Illinois Urbana-Champaign — Champaign, IL | Expected May 2027
Physics, B.S. — 4.00/4.00

University of Illinois Urbana-Champaign — Champaign, IL | Expected May 2027
Electrical Engineering, B.S. — 4.00/4.00

Relevant Coursework

Introduction to Computing, Introduction to Electronics, Introduction to Computer Science I, Multivariable Calculus, Linear Algebra, Differential Equations, Statistics, Relativity, Mechanics, Electricity and Magnetism, Quantum Physics, Thermal Physics, General Chemistry, Automotive Design Projects (EV Concept Car)