

# William Ryan

## Electronic engineer with a substantial background in physics

Bryn Mawr, PA - Email me on Indeed: [indeed.com/r/William-Ryan/3a81a4918c6063a5](https://www.indeed.com/r/William-Ryan/3a81a4918c6063a5)

Willing to relocate: Anywhere

### WORK EXPERIENCE

#### Senior Electronic Engineer

L-3 SPD Electrical Systems - Philadelphia, PA - January 2014 to Present

Debugged, fixed, tested and delivered a new 3-phase, 480 Volt -100 Amp programmable marine power system, including PFC and inverter modules, analog and digital electronics, IGBT modules and drivers, embedded processors, and analog and digital controls. Wrote embedded code for operation, test and calibration. Currently designing a supercapacitor power system, a CAN bus interface, and various sensor interfaces. Learned high power circuit breakers, motor control, SolidWorks, PADS, JTAG, Matlab and C-based embedded code.

#### Electronic Research Engineer

University of Pennsylvania Radiology Department - Philadelphia, PA - April 2011 to December 2013

Penn Instrumentation Group, University of Pennsylvania Radiology Department.  
Design, layout, prototype, test and manufacture of custom programmable high voltage power supplies for matching PMT (photo multiplier tube) gain and delay to enable high resolution time-of-flight analysis for the Penn research PET (positron emission tomography) scanner. Wrote software and firmware for a custom LVDS interlink and PET coincidence detection data processing system. Learned CADENCE PCB layout system, Verilog HDL for Xilinx and MATLAB for data analysis.

#### Electronic and Instrumentation Engineer

Brookhaven National Laboratory - Upton, NY - April 1991 to July 1999

Designed RHIC Beam Position Monitor (BPM) electrodes using a finite element analysis program to calculate the electromagnetic response of stripline electrodes to bunched particle beams. Built the RHIC BPM electronics: conceptualized, designed, prototyped, manufactured and installed the instrumentation electronics, including power, network, timing and packaging, used to make high accuracy and high resolution differential measurements on nanosecond length pulses for the 667 BPM electrode pairs in the RHIC machine. Units contained a self-calibrating, high speed, high accuracy and high resolution RF pulse detector, a 16 bit signal digitizer, a Motorola 56000 series DSP and an Altera FPGA. Designed, prototyped, and redesigned a custom digital oscilloscope for grabbing digitized snapshots of particle beam bunches on a turn-by-turn basis, which contained a gain-switching front end, ECL data handling for a 500 MSPS 8-bit ADC, digital architecture to interface ECL digital registers to SRAM, and a triggering device using a LeCroy high resolution TDC. Built a variety of instruments for various accelerator applications, including analog, RF and microwave amplifiers, directional couplers, switched integrators, filters and synchronous detectors.

#### Electronic Engineer

Raytheon Company, Missile Systems Division - Tewksbury, MA - July 1989 to June 1990

Design, layout and testing of digitally controlled RF devices on CMOS ASICs for signal processing in radar receivers. Initiated

design of a prototype CMOS imaging/processing chip.

### **Electronic Engineer**

Itek Optical Systems - Lexington, MA - June 1985 to June 1990

Designed and built adaptive optic and laser systems.

### **Engineering Summer Intern**

Teradyne Electronics - Boston, MA - June 1983 to June 1984

Responsibilities

Designed and built hardware and software for ATE (Automatic Test Equipment) systems.

## **EDUCATION**

### **Master of Engineering in Electrical Engineering**

Cornell University - Ithaca, NY

1984 to 1985

### **Bachelor of Science in Applied and Engineering Physics**

Cornell University - Ithaca, NY

1980 to 1984

## **ADDITIONAL INFORMATION**

Skills & Experience

Analog, RF & microwave circuit design

Radar signal processing

Instrumentation circuit design

RF integrated circuit design, ASIC design

High voltage analog circuit design

Power circuit and power supply design, IGBTs, IGBT gate drivers, digital feedback control

Adaptive optics and optical engineering, including lens design and Fourier optics

CCD imaging and image processing

Lasers and laser interferometers

Analog controls and digital controls

Automatic Test Equipment (ATE), both testing and calibration, JTAG

Digital circuit design

PCB layout design: CADENCE, PADS

Verilog HDL design for Xilinx gate arrays

Systems design and construction: conceptualization, specification, design, prototyping, manufacturing, assembly, test & calibration, installation, commissioning.

Programming languages: C, C++, Python, Unix, Linux, LabVIEW, SPICE, MATLAB, embedded code

Have held Secret and other DOD security clearances