

# William Painter

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## EDUCATION

### KARLSRUHE INST. OF TECH.

PH.D PHYSICS

17 May 2019 | Karlsruhe, GER

### COLORADO SCHOOL OF MINES

M.Sc APPLIED PHYSICS

8 May 2015 | Golden, CO, USA

BS ENGINEERING PHYSICS

9 May 2014 | Golden, CO, USA

## COURSEWORK

### GRADUATE

General Relativity

Classical and Quantum Mechanics

Nuclear Physics Course TA

### UNDERGRADUATE

In addition to general courses:

Nuclear Physics

Solid State Physics

Particle Physics and Interactions

Design, Build, Fly, Analyze Albedo

Measuring Satellite

## EXPERTISE

### PROGRAMMING

Primary Languages

C++ • CERN Root •  $\LaTeX$  • Python

Additional Languages

C/C# • Arduino • CNC Programming •

Mathematica • Limited FORTRAN

Operating Systems

Windows XP/7/8/10 • Linux Mint 17 •

Ubuntu 12.04-18.04 • RedHat •

Raspbian • Mac/Apple

### DESIGN AND CONSTRUCTION

Metalwork

Machine Shop Safety • Experience with

Lathe, Mill, Press, CNC • MIG+TIG Weld. •

Oxyacetylene Cutting

Electrical

Wire & PCB, Hand & Reflow Soldering •

PCB design • Noise Analysis

Lab Expertise

Optical Alignment & Handling • Vacuum

Cavity Const. + Leak Testing ( $\approx 10 \mu\text{Pa}$ ) •

Laser Safety • Nuclear Source Handling •

High Voltage Safety ( $\leq 2 \text{ kV}$ )

## RESEARCH

### KARLSRUHE INSTITUTE OF TECHNOLOGY | PH.D RESEARCH

Aug. 2015 – May 2019 | Karlsruhe, Germany

Design, construction and evaluation of Silicon Photomultiplier based focal surface element for future orbital Ultra High Energy Cosmic Ray and Neutrino detecting telescopes, EUSO and POEMMA. First deployment April 2017 with EUSO-SPB1 onboard NASA Super Pressure Balloon mission. Additional testing at the Pierre Auger Observatory, Argentina. Characterization and Calibration carried out at KIT in Karlsruhe, Germany.

### COLORADO SCHOOL OF MINES | B.Sc & M.Sc RESEARCH

May 2014 – Aug. 2015 | Golden, CO

Development of an independent Extensive Air Shower arrival direction reconstruction technique. Initially meant as verification study, resulted in new useful method comparable in accuracy to previous algorithms.

## EXPERIENCE

### MECHANIC | PEAK CYCLES

June 2019 - Current | Golden, CO, USA

- Collaborative work on multiple contracts for timely delivery
- Mechanical expertise in construction and repair
- Understanding of material, mechanical and assembly documentation
- Communication with customer for satisfactory service and results

### NUCLEAR PHYSICS TA | CSM PHGN-422, KIT P3

Aug. - Dec. 2014 | Golden, CO, USA

Oct. - Feb. 2015-18 | Karlsruhe, GER

- Maintained equipment and nuclear safety protocols
- Collected, assessed and returned student work weekly
- Operated nuclear experiments and advised on calculation and reporting

## PUBLICATIONS

Characterization of Hamamatsu 64-channel TSV SiPMs | DOI: 10.1016/j.nima.2018.01.029

SiECA: Silicon Photomultiplier Prototype for Flight with EUSO-SPB | DOI: 10.22323/1.301.0442

Preflight calibration and testing of EUSO-SPB in the lab and the desert | DOI: 10.22323/1.301.0457

EUSO-Balloon: Obs. and Meas. of Tracks from a Laser in a Helicopter | DOI: 10.22323/1.236.0638

The Angular Resolution of the JEM-EUSO Mission: an updated view | DOI: 10.22323/1.236.0601

### Theses

**Ph.D:** Development of a SiPM camera for detection and measurement of fluorescence emission from extensive air-showers generated by ultra high energy cosmic rays

**M.Sc:** Estimating the Angular Resolution of the Extreme Universe Space Observatory (EUSO) Using a Modified Version of the Pierre Auger Observatory Fluorescence Detector Reconstruction Framework

## REFERENCES

Dr. Andreas Haungs, Ph.D Thesis Advisor, Karlsruhe Institute of Technology andreas.haungs@kit.edu

Prof. Dr. Fred Sarazin, M.Sc Thesis Advisor, Colorado School of Mines fsarazin@mines.edu

Prof. Dr. Lawrence Weinke, Collaborator, Colorado School of Mines lweinke@mines.edu

Nate Bondi, Outdoor Rec. Center Director, Colorado School of Mines nbondi@mines.edu