

# Kellie J. McGuire



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## SUMMARY

I have approximately five years of experience in experimental physics research, most recently as a PhD student at the University of Washington. In early 2023 I made the extremely difficult decision to leave my PhD program at the end of the academic year and move to Utah to be closer to family. I am now actively searching for a career where I can draw on both my science and English backgrounds.

## EXPERIENCE

JUNE 2020 – JUNE 2023 (FT)

Center for Experimental Nuclear Physics and Astrophysics

### *Graduate Research Assistant*

As a PhD student I worked on the DAMIC-M experiment, an international collaboration searching for particle dark matter using silicon charge-coupled devices (CCDs). Under the supervision of my advisor, Alvaro Chavarria, I was heavily involved in:

Detector testing, characterization, and optimization, including

- Reducing readout noise to competitive, sub-electron levels
- Minimizing leakage current and identifying other sources of excess charge
- Reducing charge transfer inefficiency to  $\approx 10^{-7}$  electrons per transfer
- Selecting prototype detectors to be installed in DAMIC-M's underground laboratory for use in various scientific studies

Data processing and analysis, including developing software tools to

- Reconstruct ionization events using clustering algorithms
- Simulate detector response using Monte Carlo methods
- Generate pixel-scale maps of CCD performance using large data sets

I am the co-author of several papers that set competitive exclusion limits on the existence of dark matter and am the lead author on a paper on electron- /nuclear-recoil discrimination in scientific CCDs, currently under peer review.

AUG. 2019 – APR. 2020 (PT)

Xemed, LLC

### *Scientist Intern*

NMR analysis of hyperpolarized  $^3\text{He}$  and  $^{129}\text{Xe}$ ; operation of spin-exchange optical pumping systems for  $^3\text{He}$  and  $^{129}\text{Xe}$  polarization; copyediting grant proposals

AUG. 2017 – MAY 2019 (PT)

UNH Long Lab

### *Undergraduate Research Assistant*

Millimeter-wave lens design and analysis; developed novel method of 3D printing with the fluoroplastics Kel-F and FEP; designed and built custom filament production and lens imaging systems; contributed substantially to the design and construction of several DNP target systems used in the UNH Nuclear Physics Group's tensor-polarized target program

NOV. 2011 – OCT. 2017 (FT)

ProofreadNOW.com

### *Copy Editor and Proofreader*

Magazines, press releases, white papers, legal briefs

JAN. 2008 – AUG. 2008 (FT)

TerraTek, a Schlumberger Company

### *Technical Writing Intern*

Wrote reports and procedures for the Drilling and Completions Laboratory

## EDUCATION

2021 **Master of Science, Physics**  
*University of Washington*

2016 – 2019 **Bachelor of Science, Physics**  
SUMMA CUM LAUDE; SIGMA PI SIGMA  
*University of New Hampshire*

2000 – 2006 **Bachelor of Arts, English**  
SUMMA CUM LAUDE; SIGMA TAU DELTA  
*Southern Utah University*

## COMPUTING & ANALYSIS SKILLS

BEGINNER C/C++, Git

INTERMEDIATE Python, ROOT, Bash, statistical methods, Monte Carlo algorithms

## LABORATORY SKILLS

BEGINNER vector network analyzers

INTERMEDIATE vacuum systems, circuit design & analysis, radioisotopes, NMR, CAD modeling, machining

EXPERT 3D printing, charge-coupled devices, cleanrooms

## COMMUNICATION SKILLS

INTERMEDIATE  $\LaTeX$ , scientific presentations

EXPERT technical writing, proofreading, copy editing