

# RACHEL E JOHNSON

(214)537-5051  $\diamond$  rjohns27@nd.edu  
rachelejohnson.com  $\diamond$  linkedin.com/in/rjohns27/

## EDUCATION

### University of Notre Dame

*BS in Physics and Mathematics, Glynn Family Honors Program*

*Aug 2020 - May 2024*

*Notre Dame, IN*

Selected Coursework: Quantum Computing, Quantum Mechanics, Thermal Physics, Solid State Physics, Linear Algebra, Topology, Real Analysis, Circuitry and Electronics, Game Theory, Experimental Physics Lab, Archaeology of Hacking

## SKILLS

**Experienced:** Linux, Python, Qiskit, Git, Bash, L<sup>A</sup>T<sub>E</sub>X, True-Q, TKET, HTML, CSS

**Familiar:** C++, C#, Java, SQL, Pytorch, Mathematica, AWS, Apache, DNS, Soldering, IC Fabrication techniques, GIMP, Domino, Computer Networking, Computer Hardware, Experimental Nuclear Physics techniques, Swing Dancing

## EXPERIENCE

### Lockheed Martin Space

*Quantum Computing Intern*

*May 2022 - Present*

*Sunnyvale, CA & Remote*

Researching the effectiveness of error mitigation (Randomized Compiling) when applied to the Quantum Approximate Optimization Algorithm (QAOA) on superconducting quantum computers. Currently writing my thesis with results.

Presented my research to quantum experts, to scientists, and to a general audience.

### Art of Problem Solving Institute

*Grader for USA Mathematical Talent Search*

*Oct 2023 - Present*

*Remote*

Scored and wrote feedback for solutions to proof-based math problems.

### Notre Dame High Energy Physics

*ML Event Reconstruction Research Collaborator*

*Sept 2021 - May 2022*

*Notre Dame, IN*

Collaborated across physics and computer science departments to work towards applying a transformer neural network to particle physics data from CERN's Compact Muon Solenoid (CMS) experiment to better classify top quark collisions.

### The Observer (ND-SMC)

*Systems Administrator*

*May 2021 - Jan 2023*

*Notre Dame, IN*

Maintained WordPress website (over 2500 views per day) and troubleshooted computer issues for student-run newspaper. Initiated major website changes and assisted with purchase and setup of new computers for the office.

### Lockheed Martin Space

*Linux Systems Intern*

*June 2021 - Aug 2021*

*Littleton, CO*

Supported the Geostationary Operational Environmental Satellite (GOES) IT team with various hardware and software needs such as independently creating an internal website for live streaming 4 camera feeds, setting up servers in the clean room, kickstarting RHEL machines, and mitigating critical vulnerabilities in preparation for the February 2022 launch.

## PROJECTS

### Nuclear Physics Research at Goethe Universität

*Student Researcher*

*Goethe Universität | October 2022*

*Frankfurt am Main, Germany*

Investigated the metallic composition of jewelry and coins by using a particle accelerator to inject the objects with high energy neutrons and measuring the energy spectrum of electrons emitted from the radioactive materials.

### Calculating $e$ Using Monte Carlo Methods and Quantum Amplitude Estimation

*Team Airier-Lei*

*iQuHACK | Jan 2021*

*MIT, MA (Remote)*

Implemented a Monte Carlo simulation using Qiskit to estimate the mathematical constant,  $e$  and applied a quantum speedup algorithm to increase efficiency.

## AWARDS & MEMBERSHIP

ND Swing Dance Club Treasurer

*2022-Present*

ND Tech Ethics Center Undergraduate Affiliate

*2021-Present*

Lockheed Martin STEM Scholarship Recipient

*2020-Present*

National Merit Finalist

*2020*