AUSTIN A. ZICKUR

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Personal Statement

Undergraduate Astronomy senior with experience in Aerospace Engineering seeking an internship or research opportunity aligned with my passions and experience in dynamical control, simulation, instrumentation, data analysis, materials science, and lasers. I am a first-generation scholar possessing an array of skills with a keen aptitude for problem-solving.

Technical Experience

QSaP 2023 Workshop - *Quantum Science at Purdue* **Oct. 2023**

Purdue University, West Lafayette, Indiana

- Involved research in Quantum Information, Dynamics, Optics, Materials, Open Systems, and more
- Experienced quantum cooling and particle control with high powered lasers
- Interacted with Qiskit and quantum games

Nuclear Astrophysics at FermiLab - *IMSA Winter Intersession* **Jan. 2018**

FermiLab, Batavia, Illinois

- Instructed by professionals in a lab-classroom environment
- Constructed a Geiger counter and presented on nuclear accelerator types
- Attended international panel of research on site

Academic Experiences

Aerospace Dynamical Systems Control - *LQR, PID, Optimal Control Law*

- Linearized state feedback for angle control of gimbal, rotor, base dynamical system
- Coded an LQR controller for a single-axled robot simulation and verified requirements for time, error, and torque
- Designed an Observer-Feedback optimal controller for quadcopter simulated hoop target tracking

Computer Aided Design and Simulation - *Astrophysics and Aerospace Engineering*

- Simulated N-body gravitational problem utilizing a simple iterative method in a Newtonian mechanical frame
- Replicated the Mercury I, Mercury II, and Apollo 8 missions in Kerbal Space Program with parameters and successful status
- Drafted parts in NX with geometric dimensioning and finalized engineering drawings
- Modelled Convair Model 200 conception VTOL in NX with cockpit moving part

Fluid Dynamics, Teamwork, Engineering - *Aerodynamics, Experimentation, Technical Writing*

- Reported a cost-effective pitot-rake for parachute performance design and assessment with an engineering team
- Examined UAV wing design and ground effects on airfoil software with an engineering team
- Conditioned and calculated Mars parachute landing test with aerodynamic evaluation

Physical Instrumentation and Laboratory - *Materials Science, Spectroscopy, and Circuits*

- Tested uniaxial stress and strain of Aluminum and Steel and predicted the yield, onset necking, and failure points
- Built Rf circuits and utilized transistors to create machines
- Measured storage space on a CD/DVD by projecting laser diffraction spacing
- Predicted chemical element and controlled LED color via applied voltage and diffraction gradient

Leadership Experience

Minorities in Aerospace (MAERO) - *Membership Director, Blue Origin Sponsorship, Development*

University of Illinois Urbana-Champaign **Aug. 2022 - May 2025**

- Organized student body into Registered Student Organization
- Obtained sponsorship from Blue Origin and incorporated outreach initiatives
- Increased involvement and co-created technical projects: Ascension, Flight, and Hummingbird
- Synthesized Code and instructed for youth scholar outreach programs

Education

University of Illinois Urbana/Champaign - Bachelor of Science in Astronomy *in pursuit* **Aug. 2023 - May 2025**

Hard Skills	Soft Skills
• Controller Design	• Project Management
• Dynamical System Simulation	• Teamwork and Leadership
• C, intermediate Command	• Empathy and Productivity
• Data Analysis	• Technical Writing
• NX, SolidWorks, GD&T	• Communication
• TCL, Python, MatLab	• Skill Building and Self Sufficiency
• Physical Instrumentation	• Mandarin(3), Spanish(2), French(1)

https://austin-zickur-personal-portfolio.netlify.app/