AARON BELINSKI

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EDUCATION

Rutgers University, School of Engineering — New Brunswick, NJ
Bachelor of Science, Aerospace Engineering — Expected May 2030

- **Coursework:** Calculus I, Analytical Physics I, General Chemistry for Engineers, Introduction to Experimentation, Engineering Design (ID3EA I), Engineering Economics

Middletown High School South — Middletown, NJ
High School Diploma — June 2026

- GPA: 4.43 weighted | SAT: 1500 | AP Scholar with Distinction
- Completed Multivariable Calculus (dual enrollment, Seton Hall University), AP Physics C: Mechanics and E&M

ENGINEERING EXPERIENCE

Rutgers Rocket Propulsion Laboratory — New Brunswick, NJ
GNC Lead, Avionics — Sept 2026 – Present

- Developed a 3-state Kalman filter (altitude, velocity, acceleration) fusing barometer and accelerometer data, plus an attitude and heading reference system, for the Ganesha III and Hephaestus flight computers
- Designed and simulated the filter in MATLAB, then implemented it in C++; held simulated coast-phase altitude error near 0.5 m, inside 3-sigma covariance bounds
- Characterized sensor noise from FAR 2026 flight data (Mach 1.5, 7,400 m apogee), measuring 2.9 m (1-sigma) barometer noise to set the measurement covariance
- Lead the team's GNC effort; identified 6 timing and data-integrity bugs in the shared C++ sensor drivers, including an unenforced 200 Hz loop rate

Rutgers Mechanical and Aerospace Engineering, Prof. Laurent Burlion — New Brunswick, NJ
Incoming Undergraduate Researcher, Controls — Spring 2027

- Selected to join a research group focused on nonlinear control, spacecraft attitude control, and flight control

TECHNICAL PROJECTS

Rocket Trajectory Simulator | *Python, NumPy* — 2026

- Built a staged vehicle simulation model in Python with a vertical point-mass model, real motor thrust curves, variable mass, and a .eng motor file parser
- Verified the numerical integrator against hand calculations and separated timestep error from a floating-point artifact

Ramjet Engine Design and Analysis | *Hand analysis, SolidWorks* — 2026

- Performed a hand-calculated station-by-station analysis of a Mach 2.5 ramjet at 10 km altitude, covering oblique and normal shocks, Rayleigh-flow combustion, and an isentropic nozzle
- Ran a trade study between single- and dual-ramp inlets and selected a two-ramp design, raising total pressure recovery from 0.692 to 0.849 (about 23%)
- Modeled the full engine in SolidWorks with the spike positioned to place the shock on the cowl lip, and produced a dimensioned engineering drawing

WORK EXPERIENCE

Middletown Township Public Schools — Middletown, NJ
Software Technical Intern — May 2024 – Sept 2024

- Selected as 1 of 8 technical interns district-wide; configured firewall rules and installed network wiring across 11+ schools

SKILLS

Technical: Kalman filtering, sensor fusion, vehicle dynamics simulation, numerical integration, trade studies, compressible flow
Programming: MATLAB, Simulink, C++, Python, Git, Linux
CAD: SolidWorks, Onshape; currently learning Siemens NX