Rafael Kalmanson

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Profile

Mechanical engineering MASc graduate specializing in propulsion, thermofluids, and high-temperature systems. Experience designing and testing rocket engine hardware, thermal systems, and instrumentation, with strong focus on experimental validation and fast iteration.

Education

MASc Mechanical Engineering (Propulsion & Thermofluids) 2023 – 2026
Concordia University

- Thesis: Regenerative cooling of a rotating detonation rocket engine (RDE)
- Designed and operated RDE test stand, tested engine flow characteristics
- Modeled heat transfer and phase change in regenerative cooling channels

B.Eng Mechanical Engineering 2019 – 2023
McGill University

- Placed 1st in multiple provincial and national engineering competitions
- Baja Racing Team — Sensors & Testing Subteam Lead

Relevant Experience

Thermal Analysis Engineering Intern Jan 2024 – Sep 2024
MDA Space

- Designed and operated thermal test systems for spacecraft hardware validation
- Evaluated and qualified thermal interface materials for flight applications
- Conducted CFD and thermal simulations on spacecraft components in extreme environments
- Developed automation tools, reducing test oversight and post-processing time by ≈90%

Test Engineering Intern May 2022 – Oct 2022
Alstom

- Designed wireless instrumentation systems for rapid deployment in test environments
- Executed validation testing to ensure measurement reliability under operational conditions
- Reduced setup time and improved test efficiency through system design
- Coordinated calibration process to maintain sensor accuracy

Propulsion & Rocketry Experience

Space Concordia Rocketry Division Aug 2024 – Jan 2026

- Designed reaction control system for spacecraft attitude control applications
- Performed CFD simulations to evaluate nozzle performance and flow regimes
- Integrated flight hardware under thermal and packaging constraints
- Supported suborbital launch operations (Starsailor)

Technical Skills

Propulsion & Thermal: Heat transfer, regenerative cooling, combustion, compressible flow, CFD
Engineering Tools: Siemens NX, Simcenter 3D, Teamcenter PLM, ANSYS, SolidWorks, Python, C