Maxwell Catmur

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# Profile

MPhys Physics graduate seeking the Graduate RF/uWave Systems Engineer role at Cambridge Consultants. Practical experience in RF and UHF systems from MBDA SAR/AESA work and a student UHF ground‑station project, with analogue circuit design, MATLAB/Simulink modelling, LabVIEW control and strong technical reporting.

# Education

**MPhys Physics (First expected) – University of Warwick October 2022 – July 2026**

**Grade:** First (expected)

* Relevant modules: electromagnetism, scientific and high-performance computing, control systems and numerical methods for modelling RF and wave phenomena.
* Designed, built and tested a DC voltage regulator circuit using op‑amps and MOSFETs, including component selection and bench validation (analogue circuit design).
* Developed a LabVIEW stabilisation algorithm and PID controller for a nodding‑donkey platform; implemented and validated control loops for improved stability.
* Ran 10,000+ N‑body simulations in Python and used post‑processing techniques for stability analysis (MEGNO), demonstrating advanced numerical modelling skills.
* Led two group research projects (6 members) on photovoltaic materials, scheduling meetings, delegating tasks and producing reports above 70%.

**A-levels – Forest School September 2020 – July 2022**

**Grade:** A\*A\*A\*A\*A\* (Maths, Further Maths, Physics, Chemistry, Extended Project)

* Extended Project (5,000 words) on mitigation of climate change through renewables, nuclear and geoengineering – awarded 100%.
* Sixth form valedictorian award for academic performance.
* Presented extended research to a cohort of 160+ students and staff, demonstrating clear technical communication and public speaking.

# Work Experience

**Undergraduate Researcher**

Warwick Mathematics Institute **June 2025 – October 2025**

* Modelled finite‑difference schemes for wave propagation across 100+ aeroacoustics simulations, implementing and validating code in MATLAB.
* Analysed performance of 10 maximal‑order and dispersion‑relation‑preserving schemes, optimising for accuracy versus computational cost.
* Prepared and presented research poster to academic peers, documenting methodology, results and validation procedures.

**Project Manager**

Warwick Aerospace Society **January 2024 – March 2025**

* Managed a 12‑member team developing a proof‑of‑concept UHF satellite ground station (passive, non‑rotator): established sub‑teams, chaired meetings and reported to senior leadership.
* Authored 30+ pages of technical documentation including Pugh matrices for antenna selection and a detailed bill of materials (component specification and selection).
* Oversaw procurement, design and hands‑on assembly of the station within 10 weeks, coordinating mechanical, RF and software efforts and guiding PCB/assembly tasks.
* Initiated MATLAB/Simulink modelling of a half‑duplex UHF ground station with rotator control using the Satellite Communication toolbox (radio system modelling).
* Introduced GitHub version control for model development to improve team collaboration and traceability.

**Fly Your Satellite Workshop (participant)**

European Space Agency **November 2024 – November 2024**

* Completed a 5‑day ESA workshop on CubeSat development covering systems engineering, requirements and ground station communications.
* Attended specialist lectures on systems and ground‑segment design and visited ESTEC to discuss engineering trade‑offs with technical experts.
* Collaborated in a rapid CubeSat design sprint and contributed rotator‑based UHF ground station communication concepts under time pressure.

**RF Seekers Summer Intern**

MBDA UK **June 2024 – August 2024**

* 10‑week placement in the Modelling and Algorithms team working on synthetic aperture radar (SAR) processing chains for AESA radar systems (RF and radar signal processing).
* Optimised a matched‑filter algorithm in MATLAB by implementing an FFT approach, reducing runtime by 85% and improving processing throughput.
* Co‑developed a data‑analysis application used by six colleagues to accelerate range–Doppler image analysis during a field campaign.
* Integrated a mid‑fidelity range–Doppler algorithm for rapid sanity checks and contributed 50+ commits using professional version control practices.
* Presented technical outcomes to 20+ colleagues, clearly communicating methods, results and next steps.

# Projects

# Skills

**Languages**: MATLAB, Simulink, Python, C, SQL, JSON.

**Libraries:** NumPy, SciPy, Matplotlib.

**Tools:** LabVIEW, Git / GitHub, Origin Pro, MATLAB Satellite Communication toolbox.

**Soft Skills:** Technical communication (written and verbal), Presentation (client/management facing), Cross‑discipline collaboration, Documentation and reporting, Problem solving and debugging, Project management and team leadership.

**Interests:** Amateur radio, Wireless systems, Satellite communications, Control systems.