Maxwell Catmur

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# Profile

MPhys Physics graduate seeking a Graduate RF/uWave Systems Engineer role. Practical experience in RF and radio systems including AESA SAR processing, UHF ground-station design, analogue circuit prototyping and MATLAB/Simulink simulation. Strong documentation, presentation and cross-discipline collaboration skills.

# Education

**MPhys Physics – University of Warwick October 2022 – July 2026**

**Grade:** First (expected)

* Relevant modules: electromagnetism, scientific and high-performance computing, advanced mathematical methods, fluid mechanics and statistical physics.
* Numerical simulation experience: ran 10,000+ N-body and Monte Carlo simulations (Ising model) and implemented finite-difference PDE solvers in C and MATLAB for wave and heat problems.
* Designed, built and tested a DC voltage regulator circuit using op-amps and MOSFETs (analogue circuit design and hand‑built prototyping).
* Developed a stabilisation algorithm in LabVIEW for a nodding‑donkey system implementing PID control and improved actuator stability.
* Led two group research projects (6 members each), scheduling meetings, delegating tasks and producing technical reports above 70%.

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

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

* Received sixth-form valedictorian award for best academic performance.
* Produced a 5,000-word extended project on energy mitigation strategies achieving 100%.
* Presented research to 160+ students and staff, demonstrating clear verbal communication and public speaking.

# Work Experience

**Undergraduate Researcher**

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

* Modelled finite‑difference methods for wave propagation across 100+ aeroacoustics simulations using MATLAB, focusing on dispersion and stability.
* Analysed and compared 10 high‑order schemes, optimising for accuracy versus computational cost and documenting results for reproducible testing.
* Prepared and presented research poster summarising methodology and findings to academic peers and supervisors.

**Project Manager — UHF Ground Station**

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

* Managed a 12‑member team to design, procure and assemble a proof‑of‑concept UHF satellite ground station (NOAA reception) in 10 weeks, producing a detailed bill of materials.
* Performed antenna selection using Pugh matrices, documented trade-offs and produced 30+ pages of technical specification and test plans.
* Implemented MATLAB/Simulink modelling (MATLAB Satellite Communications toolbox) for a half‑duplex UHF ground station and validated link performance through simulation.
* Coordinated cross‑discipline activity, chaired weekly meetings and provided progress reports to senior leadership.

**Academic Coordinator**

Warwick Physics Society **March 2024 – March 2025**

* Delivered seven revision lectures and weekly support sessions, explaining complex physical concepts to groups of up to 100 students.
* Organised a high‑profile departmental event attended by 100+ staff and students, managing logistics and technical briefings.
* Received positive feedback for clear written materials and verbal explanations; improved student engagement and understanding.

**Fly Your Satellite Workshop Participant**

European Space Agency (ESTEC) **November 2024 – November 2024**

* Completed a 5‑day CubeSat systems engineering workshop covering requirements, ground‑station communications and end‑to‑end product considerations.
* Attended technical lectures on systems engineering, testing and ground communications from ESTEC experts and applied learnings to a rapid design sprint.
* Collaborated in a 10‑person team to meet mission requirements within strict time constraints, practising stakeholder communication and rapid prototyping decisions.

**RF Seekers Summer Intern — Modelling and Algorithms**

MBDA UK **June 2024 – August 2024**

* Worked on synthetic aperture radar (SAR) processing chains within AESA radar contexts, improving matched‑filter performance by implementing FFT methods and reducing runtime by 85%.
* 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, contributed 50+ commits using professional version control and presented outcomes to 20+ colleagues.

# Projects

# Skills

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

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

**Tools:** Git / GitHub, Microsoft Office, OriginPro, MATLAB Satellite Communications Toolbox.

**Soft Skills:** Technical documentation and specification, Client and management presentations, Cross‑discipline collaboration (hardware, embedded, DSP), Problem solving and debugging, Project coordination and stakeholder communication.

**Interests:** Wireless communication, Satellite systems, Amateur radio, Electronics prototyping.