

JOSEPH ALLCOCK

📍 UK

✉ jsallcock*AT*gmail.com

in [linkedin.com/in/jsallcock](https://www.linkedin.com/in/jsallcock)

🌐 [jsallcock](https://jsallcock.com)

I am a software engineer working on tools for lighting and look-development in VFX. I have a background in physics, specialising in camera imaging and spectroscopy for nuclear fusion research.

EXPERIENCE

Software engineer

📍 Foundry

📅 2022 – present

- Working on the lighting and look-development tool [Katana](#), whose codebase is C++/Python.
- My team is focused on improving Katana performance.

Postdoctoral researcher

📍 UK Atomic Energy Authority

📅 2020 – 2022

- Responsible for multiple camera systems on [MAST-U](#), the UK's flagship tokamak experiment.
- My role covered design, operation and data analysis for operational and scientific camera systems.
- Applied techniques from computer vision, tomography and Bayesian statistics to interpret data.
- Supervised multiple successful student research projects.
- Voluntary roles included outreach at schools, New Scientist Live and organising weekly talks.
- Fellowship was jointly funded by Princeton Plasma Physics Laboratory.

Intern

📍 Kromek

📅 Summer 2014

- A funded internship from the Institute of Physics.
- Development and testing of a portable neutron-gamma radiation detector.

SELECTED PUBLICATIONS

1. J. S. Allcock et al. "[Wavelength calibration of birefringent interferometers for 2D measurement of plasma flow](#)" *Optics Express* Vol. 31, Issue 2, pp. 1901-1915 (2023).
2. J. S. Allcock et al. "[2D measurements of plasma electron density using coherence imaging with a pixelated phase mask](#)." *Review of Scientific Instruments* 92.7 (2021): 073506.
3. T. Long, J. S. Allcock et al. "[Doppler coherence imaging of scrape-off-layer impurity flows in the HL-2A tokamak](#)." *Review of Scientific Instruments* 91.8 (2020): 083504.
4. T. A. Wijkamp, J. S. Allcock et al. "Characterization of 2D atomic and molecular emission processes in the MAST-U super-X divertor during detachment" (*Nuclear Fusion*, accepted).
5. X. Feng et al. "[Development of an 11-channel multi wavelength imaging diagnostic for divertor plasmas in MAST Upgrade](#)." *Review of Scientific Instruments* 92.6 (2021): 063510.

EDUCATION

PhD, Physics

📍 Durham University

📅 2015 – 2020

- Member of the Centre for Advanced Instrumentation ([CfAI](#)) and the Fusion Centre for Doctoral Training ([Fusion CDT](#)).
- Received the 2017 University College Travel Scholarship and spent 8 months total in Eindhoven, San Diego and Chengdu.
- Presented my work in peer-reviewed journals and at international conferences.
- My [thesis](#) further developed spectral imaging interferometry as a diagnostic tool in fusion experiments.
- My work improved performance by incorporating a novel sensor technology and reduced calibration hardware costs tenfold.

MPhys, Physics (1st class)

📍 University of York

📅 2011 – 2015

SKILLS

• Programming (years experience):

Python (8) Matlab (2) Mathematica (2)
C++ (2) JavaScript (<1) Fortran (<1) IDL (<1)

• Computing:

Latex Git Linux MacOS Windows
Adobe Qt

• Scientific:

optics statistics computer vision
data analysis fluids plasma spectroscopy
inverse problems

• General:

agile communication collaboration
supervision public speaking

• Creative:

[fine art](#) data visualisation