

# UKAEA Fusion Internship Scheme (Undergraduate Summer Research Opportunity)

## Hydrodynamic instability growth in laser driven inertial fusion

In inertial confinement fusion (ICF), where lasers are used to compress a tiny capsule of fuel to nuclear fusion conditions, having uniform irradiation is crucial to achieving high energy yields. The focal spot of each laser beam has high intensity hotspots which can act as seeds for the growth of hydrodynamic instabilities. These instabilities reduce the implosion efficiency and can cause mixing of the outer ablator material into the central fuel. Techniques such as use of a phase plate or smoothing by spectral dispersion (SSD) can be used to smooth the focal spot, reducing intensity hotspots and removing these seeds for harmful hydrodynamic instability growth.

Over a 8-week paid internship you will join a supportive and enthusiastic research group at the York Plasma Institute working on laser-plasma interaction studies for ICF. You will work on real data taken on the OMEGA laser facility exploring the growth of hydrodynamic instabilities under different levels of SSD. Alongside developing coding and scientific data analysis skills you will also have the opportunity to engage with current fusion researchers and learn about the various routes into fusion and high power laser science, both academic and industrial. At the end of the internship, you will present a poster on your work at a showcase event in September 2026 at UK Atomic Energy Authority, Culham.

This placement is funded by the UK Government through the UKAEA Fusion Internship Scheme.

## Skills, Experience & Qualifications

- Currently studying a degree in physics, mathematics, engineering or related disciplines
- Have excellent analytical and problem-solving skills, with some experience in computational modelling/data analysis (e.g. Python)
- Show enthusiasm and knowledge about fusion energy and plasma physics, with an interest in pursuing a career in this field

## How to apply

Fill out the application form [here](#), providing a CV and short cover letter.

Application deadline is 10th May 2026, with interviews to be held week commencing 18th May 2026.

*The University strives to be diverse and inclusive – a place where we can ALL be ourselves. We particularly encourage applications from people who identify as Black, Asian or from a Minority Ethnic background, who are underrepresented at the University.*

*We offer family friendly, flexible working arrangements, with forums and inclusive facilities to support our staff. #EqualityatYork*

For any enquiries please contact Dr. Emma Hume ([emma.hume@york.ac.uk](mailto:emma.hume@york.ac.uk))