OXFORD SIGMA

OXFORD SIGMA JOB DESCRIPTION

01 March 2023

JOB TITLE:	Fusion Engineer (Intern)
JOB LOCATION:	Harwell Science & Innovation Campus, Oxfordshire, UK
HOURS:	Full-time (37.5 hours per week)
SALARY:	£19,500 pro rata
DATES	Starts July 2023 (8-week placement)
JOB REFERENCE:	OS-JA-INTERN-04

COMPANY DESCRIPTION

About Oxford Sigma (OS): Oxford Sigma is a research and technology development company that seeks out novel and innovative nuclear solutions that could have the potential to become disruptive technologies to significantly change the course of the world's clean energy future. OS has wide expertise in fusion energy, advanced-fission, and nuclear space systems. OS has innovative patent pending technology in fusion components, materials and technology, with the aim of enabling the commercialisation of fusion and advanced fission energy. OS stands out among nuclear and scientific engineering companies as it is a small company owned and operated by scientists and engineers. The company roots are within Oxfordshire with its headquarters at Harwell Campus.

In addition to OS technology development, the company has established itself as a highly technical service supplier for the fusion energy market, both within the private and public sector. OS has become part of the emerging supply chain ecosystem within the UK, USA and globally for fusion energy. The company supports various national laboratories (USA, UK), governments, regulators, design companies (fusion and fission), and provides technical services on the Engineering Delivery Partnership for the UK Atomic Energy Authority's (UKAEA) flagship Spherical Tokamak for Energy Production (STEP) programme, the Office for Nuclear Regulation's Technical Support Framework, and other frameworks including the UKAEA Tritium Engineering Framework. In the private sector Oxford Sigma works extensively in materials strategy, materials R&D and fusion reactor design.

The company is a member of the Fusion Industry Association (FIA), a registered non-profit organisation composed of private companies working to commercialise fusion power, the UK Fusion Cluster which hosts a collection of UK fusion companies striving for commercialisation, and is a contributing member to the American Society of Mechanical Engineers (ASME) BPVC nuclear design code committees.

PROJECT DESCRIPTION

This project will be embedded into Oxford Sigma's reactor design team, working on neutron transport simulations to optimise breeder blanket design. This project will use the OpenMC neutron transport code and along with Oxford Sigma's inhouse simulation suite to investigate the use and combination of different materials and geometries, with a focus on the impact this has on the performance, economics and societal implications of fusion energy.

This project will involve a thorough literature review, including the use of Oxford Sigma's extensive internal resources to understand the current state, before advancing to computational simulations. Computational work will involve the running of 2D infinite slab

models to understand the effect of combinations of materials and their position, then progressing to parametric commercial fusion power plant relevant geometries. Depending on the candidate's interests, the project can be adjusted to focus on the development of Oxford Sigma's inhouse computational reactor design software.

The candidate responsibilities will include:

- Joining the core team that develops the business and its future direction.
- Working in a team, as well as independently on technical projects.
- Striving to push scientific and technical boundaries.
- Analysing data, producing visualisations and providing insight to guide future reactor design.
- Constructing and executing Monte Carlo neutron and photon transport simulations.
- Reviewing literature and being inquisitive to gain a strong technical underpinning.
- Presenting results in technical reports and oral presentations, both to the reactor design teams and wider Oxford Sigma colleagues.

ELIGIBILITY

The candidate must have the **right to work in the UK** and able to work from Oxford Sigma's Harwell Campus in Oxfordshire.

The candidate must be an Undergraduate, Postgraduate or PhD student who is still classified by their university as a student at time of placement start.

QUALIFICATIONS/EXPERIENCE

The candidate will have the following qualifications/experience:

- Strong academic background.
- Excellent verbal and written communication and presentation skills.
- An understanding of fusion energy systems.
- Intuitive and creative problem solver
- Basic experience in Python scripting

Advantageous qualifications/experience:

- Experience in developing object-oriented Python software.
- Understand the principles of neutron transport.
- Have a working knowledge of materials science.
- Comfortable with data analysis and visualisation.

ADDITIONAL INFORMATION

OS is a dynamic, fast-paced, and exciting company that is working on some of the world's most technically challenging endeavours, such as fusion and advanced fission energy. The company is based at the world-leading science business park, Harwell Science and Innovation Campus in Oxfordshire, which provides a rich, engaging environment with fellow similar highly technical companies who work in the space, health, and energy sectors.

The candidate must have the right to work in the UK and able to travel to the UK office.

The benefits that OS provides include:

- 28 days paid annual leave pro rata.
- Workplace pension scheme.

- We support employees if they want to be (or are) part of the military reserves.

OS is expanding its technical team and is looking to recruit a Fusion Engineer Intern for summer 2023. This is an exciting time for OS as the company is expanding the core business practice into developing patent pending technology for solutions that could accelerate the commercialisation of fusion energy.

This internship is in collaboration with the UKAEA through the Fusion Industry Programme (FIP). The FIP targets the third pillar of the UK's Fusion Strategy, which is "commercial leadership via thriving private-sector innovation and technology transfer". A key element to achieving this is to attract and retain a diverse range of talented people working within the fusion industry. The FIP includes an Education Scheme which aims to increase the supply of highly skilled students and researchers into the sector.

UK Atomic Energy Authority

This internship position at Oxford Sigma plans to be part of the Summer Placement Scheme and it will enable students to undertake paid placements within host organisations related to the fusion industry.

APPLICATION

Send internships@oxfordsigma.com an email with the Job Reference number (OS-JA-INTERN-04) in the subject line, which contains your CV and cover letter.

The application deadline is **17:00 Friday 14th April 2023**.