

## Propulsion System Modelling

**Code:** 20/48

**Company:** Protolaunch

**Location:** Remote Working

### **Company Description:**

Protolaunch is a startup developing novel rocket propulsion systems that will enable a new generation of small launch vehicles. These engines leverage a novel and bespoke thermodynamic cycle designed specifically for the launch of small payloads.

Simplicity, reliability, and sustainability are at the core of our engine design to enable new value propositions for our launch partners. We are currently engaged in a project with ESA to de-risk and assess our thermodynamic cycle, and are also working in a partnership with the University of Southampton to develop a technology demonstrator. Hot-fire testing of the demonstrator is on track to be completed in Q4 2020.

### **Project Description:**

We are currently developing a novel engine-cycle for a rocket engine that avoids turbopumps. These are complex, expensive and potentially unreliable components that drive up the cost of design, testing and manufacturing of a rocket engine.

To better predict the engine performance, plan test campaigns and design variants of the engine, Protolaunch is developing a high-fidelity model of the engine and test-rig. As part of this project, the successful applicant will assist in developing models of specific engine and test-rig components.

During this project the successful applicant will:

- Develop simulation models of fluid systems.
- Use these models to predict component performance and identify key modelling assumptions that need to be tested experimentally.

### **Applicant Specification:**

Student, preferably graduate or 3rd/4th year undergraduate, in engineering, maths, physics or equivalent. Applicants should be enthusiastic and willing to get stuck into problems which they won't have had much experience in before!

Whilst carrying out this project we expect the applicant to develop:

- Experience of working in a small dynamic team.
- Practical experience of working with models of complex engineering systems.
- Experience in presenting technical results.

**Minimum Requirements:**

- Experience with Python/MATLAB.
- Good written and verbal communication skills.

**Preferred Additional Requirements:**

- Undertaken a course on either fluid mechanics, thermodynamics or control theory.

**Further details:**

8 weeks minimum fixed term contract with a flexible start date around mid-july to be agreed with the successful candidate. Attendance required at the Virtual Induction Event to be held on 15 July 2020. Salary is £1,350 per calendar month gross.

**Closing Date for Applications: 5pm Monday 13 July**

Applications should be made through the online form attaching a CV, before the closing date. Please note that elements of the form left incomplete will be deemed to render the application ineligible. They will be checked for eligibility and forwarded to the employer.