Job Title: Scientist, Plasma-Facing Component Protection IO1172

Requisition ID **8032** - Posted - (France, 13067 St Paul Lez Durance Cedex) - **Science and Technology Expertise** - **New Posting**

Fusion, the nuclear reaction that powers the sun and the stars, is a promising long-term option for a sustainable, non-carbon emitting global energy supply.

The ITER Organization (IO), based in the southern France, welcomes best talents who can together prepare the way to this new energy in a truly multi-cultural work environment.

We offer challenging assignments in a wide range of areas and encourage applications from candidates will all levels of experience. Applications from under-represented ITER Members' nations and women candidates are strongly encouraged, as IO strongly believes that a diversified, equitable, and inclusive workplace is crucial in solving one of the most complex scientific and engineering projects in the world today.

As the IO attracts and retains people coming from a vast array of different backgrounds and cultures, discrimination and exclusion cannot be tolerated. The IO believes it is our diverse perspectives and background that gives unique strength and value to the ITER mission, regardless of race, member nation, gender, religion, status, sexual orientation, or disability - all are welcome and respected at ITER.
The IO is committed to fostering a fair and equitable environment across all areas of the project, including compensation and benefits.
ITER CARE Values (Collaboration / Accountability / Respect / Excellence):
We perform our work with care, we care for the well-being of colleagues, our families and ourselves, and we care about the health of the planet for generations to come. CARE drives our work and our behaviors at ITER.

To see why ITER is a great place to work, please look at this video

Application Deadline: 28/09/2025
Department: Science & Integration Department
Division / Program: Science Division
Section / Project: Experiments & Plasma Operation Section
Job Grade: P1/P2 (SALARY SIMULATOR)
Language Requirements: Fluent in English (written & spoken)
Contract Duration: Initial Employment Contract up to five years with possibility for extension

Please note that the entry grade of this position begins at P1 and the final grade offered to the selected candidate is subject to the decision of the IO Director General.

Overview

Are you looking for an exciting opportunity at the heart of an ambitious fusion energy project? Join us as a Scientist where your goals will include:

- Developing schemes for the heat load protection of ITER's plasma-facing components (PFC) and implementing them in the ITER Plasma Control System.
- Assisting PFC design and assembly teams in the assessment of the impact of PFC alignment on plasma operations.
- Participating in a multi-year training programme to become a future ITER session leader (machine operator).

A primary objective of the Experiments and Plasma Operation Section is to support the preparation for ITER plasma operation and execution of the ITER Research Plan by providing the design of the Plasma Control System (PCS), support its commissioning and define and verify implementation of protection strategies. It also aims to develop and validate pulse design simulators for plasma scenario preparation, define rules and instructions for ITER operation and provide training of tokamak and PCS operators.

Key Duties and Responsibilities

Primary Responsibilities

- Develops real-time protection schemes for ITER's First Wall and Divertor plasma-facing components under plasma heat loads.
- Integrates heat load protection functions into the ITER Plasma Control System (PCS) and conducts assessments within the Matlab/Simulink based Plasma Control System Simulation Platform (PCSSP).
- Supports ITER technical units to address the impact of plasma-facing component (PFC) misalignments on heat load management.
- Proposes, promotes and participates in the execution of experiments designed to test ITER's PFC heat load control schemes on tokamak devices within the ITER Members programs.
- Actively contributes to the Plasma Operations team with a focus on acquiring knowledge and training toward a future ITER machine operator role.

Additional Responsibilities

- Supports the broader design and assessment of the PCS beyond PFC heat load control when needed. Participates in the development of synthetic diagnostics and software required for the simulation of PFC heat loads and surface temperatures.
- Participates in the definition, development and documentation of tools needed to prepare, validate and program ITER plasma discharges.
- Supervises when required ITER staff/visiting and postdoctoral researchers/PhD students/ interns contributing to studies in areas of ITER physics related to PFC protection, plasma control and eventually physics operations.

Please note that job descriptions cannot be exhaustive, and the staff member may be required to undertake other duties, which are broadly in line with the above primary responsibilities.

This position is shift and/or on-call based, and crucial to maintaining continuous operations and ensuring the highest level of service for our stakeholders. This requires shift rotation and/or availability including day, evening, and night shifts, as well as weekends and holidays, depending upon project or team needs;

Experience & Competencies

Essential:

- **Proven experience** in fusion science**,** particularly in the fields of plasma control and, if possible, in heat fluxes to plasma-facing components.
- **Plasma Control:** designing and optimizing plasma control schemes for scientific purposes, definition of control requirements and strategies, development of simplified actuator and sensor models for plasma control.
- **Software:**
  - **Simulink / MATLAB:** high level knowledge and proven practical experience of Simulink, in particular the design of Simulink models and testing and verification through Simulink tools.
  - **Programming languages** commonly used in fusion plasma simulation applications and workflow management (e.g. Fortran, Python, C/C++).

Desirable:

- Basic knowledge/experience of tokamak operation.
- Codes and analysis tools addressing experimental aspects of tokamak plasmas (e.g. stability analysis tools, 1-D or 2-D reconstruction tools for profiles of plasma parameters, material heat impact codes, field line tracing codes, etc.).

Qualifications

Essential:

- Master's degree or equivalent in fusion plasma physics field or other relevant discipline.

- *The required education degree(s) may be substituted by extensive professional experience involving similar work responsibilities and/or additional training certificates in relevant domains*

The following items apply to all jobs and job holders for the duration of tenure at ITER Organization:

- **The CARE Values are a framework of principles that guide our actions and define the culture and spirit of the ITER Project:**
  Collaboration: We collaborate with commitment and flexibility using the power of teamwork, building partnerships, and working with others to reach shared objectives;
  Accountability: We are accountable for the whole project - we take responsibility for our specific actions and are transparent in our daily work, holding self (ourselves) and others accountable to meet commitments;
  Respect: We treat each other with respect and dignity at all times, knowing that all of us belong here. We appreciate the value that our multicultural and diverse community brings to the ITER Project;
  Excellence: We are driven by excellence; we are agile and innovative while maintaining the highest standards of safety, quality and integrity;

- **ITER Core Technical Competencies**:
  1) **Nuclear Safety, Environment, Radioprotection and Pressured Equipment**
  2) **Occupational Health, Safety & Security**
  3) **Quality Control & Quality Assurance Processes**
- **Knowledge of these competencies may be acquired through on-board training at basic understanding level for all ITER staff members;**
- Implements the technical control of the Protection Important Activities, as well as their propagation to the entire supply chain;
- May be requested to perform other duties in support of the project as defined by your line manager, and when relevant upon the request of the matrix manager;
- May be requested to work outside the ITER Organization reference working hours, including nights, weekends and public holidays, due to business needs - this may include on-call, shift work, etc.
- May be requested to be part of any of the project/construction teams and to perform other duties in support of the project;
- For staff expected to perform on-call, shift hours, or other work outside ITER Organization reference working hours, including nights, weekends, and public holidays, **the possession of a driving license valid in France is required. no commuting vehicle will be provided by the ITER Organization.**
- Informs management of any important and urgent issues that cannot be handled by line or matrix management and that may jeopardize the achievement of the Project's objectives;

The ITER Organization (IO) is an Equal Opportunity organization committed to diversity and inclusive in the workplace.