Job Title: Scientific Officer (Disruption Modelling) IO1030

Requisition ID **3841** - Posted **26/04/2021** - (France, 13067 St Paul Lez Durance Cedex) - **Science and Technology Expertise** - **New Posting**

The ITER Organization brings together people from all over the world to be part of a thrilling human adventure in southern France—building the ITER Tokamak. We require the best people in every domain.

We offer challenging full-time assignments in a wide range of areas and encourage applications from candidates with all levels of experience, from recent graduates to experienced professionals. Applications from under-represented ITER Members and from female candidates are strongly encouraged as the ITER Organization supports diversity and gender equality in the workplace.

Our working environment is truly multi-cultural, with 29 different nationalities represented among staff. The ITER Organization Code of Conduct gives guidance in matters of professional ethics to all staff and serves as a reference for the public with regards to the standards of conduct that third parties are entitled to expect when dealing with the ITER Organization.

The south of France is blessed with a very privileged living environment and a mild and sunny climate. The ITER Project is based in Saint Paul-lez-Durance, located between the southern Alps and the Mediterranean Sea—an area offering every conceivable sporting, leisure, and cultural opportunity.

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

Application deadline: 06/06/2021
Domain: Science & Operation
Department: Science,Controls & Operation
Division: Science
Section: Experiments and Plasma Operation
Job Family: Scientific Coordination
Job Role: Scientist - 1
Job Grade: P2
Language requirements: Fluent in English (written & spoken)
Contract duration: Up to 5 years

Purpose

As Scientific Officer specialized in Disruption Modelling, you will provide data from simulations of plasma disruptions in ITER, including the assessment of results from modelling activities through collaborations, and guide external scientific collaborators providing input to the ITER Organization in the area of disruption modelling.

You will also further develop disruption simulation codes and workflows towards the ITER needs and contribute to the development of the ITER Disruption Mitigation System.

Background

Plasma disruptions in ITER will cause significant electro-magnetic and thermal loads that can reduce the lifetime of machine components. Management of disruption loads and effective means for their mitigation are key elements for successful operation of ITER from the early phases of pre-fusion power operation (PFPO) onwards. A Disruption Mitigation System (DMS) is presently being designed to achieve the required reduction in loads.

Major Duties/Roles & Responsibilities

- Performs simulations and analysis for the assessment of electro-magnetic and heat loads during plasma disruptions to prepare ITER operation;
- Performs simulations to provide disruption relevant data within the DMS Task Force Program for validation of the ITER DMS design;
- Assesses the needs for code adaptation and optimization to the ITER requirements;
- Performs development of codes and establishes workflows within the ITER Integrated Modelling and Analysis Suite (IMAS) to provide advanced analysis of modelling results;
- Participates in the establishment and monitoring of contracts related to the simulation of disruption loads and their mitigation;
- Contributes to the preparation of the disruption load validation program and the DMS commissioning plan;
- Contributes to the development of tools for pre-pulse assessment of disruption loads and disruption likelihood;
- Provides physics support to engineering analysis performed by other teams within the ITER Organization;
- Liaises with R&D experts on disruption physics in the ITER Members institutions (for example through the International Tokamak Physics Activity and the ITER Scientist Fellow Network);
- May be requested to be part of any of the project/construction teams and to perform other duties in support of the project;
- May be required to work outside ITER Organization reference working hours, including nights, week-ends and public holidays.

Measure of Effectiveness

- Provides state-of-the-art simulations of ITER plasma disruptions and performs thorough evaluation and quality documentation of the results obtained;
- Demonstrates a systematic approach to code development;
- Ensures successful integration of simulation tools into the ITER IMAS Framework;
- Contributes to the efficient execution of contracts on time and on budget;
- Responds efficiently and competently to engineering analysis groups for physics input in the area of plasma disruptions;
- Fosters strong links and information exchange between the ITER Organization and disruption specialists in the ITER Members' R&D Institutions;
- Ensures good communication with stakeholders in the Science Division and in other Engineering Divisions involved in disruption management;
- Communicates well and maintains high professional standards when interfacing with staff from the ITER Organization and ITER Members' R&D institutions and Domestic Agencies.

Experience & Profile

- ***Professional Experience:***
  - At least 3 years' experience in the modelling of plasma instabilities in magnetic confinement devices.
- ***Education:***
  - PhD or equivalent degree in fusion plasma physics or engineering
  - The required education degree may be substituted by extensive professional experience involving similar work responsibilities and/or additional training certificates in relevant domains.
- ***Language requirements:***
  - Fluent in English (written and spoken).
- ***Technical Competencies and demonstrated experience in:***
  - Specialized Domain of Work/Technical Expertise (Disruption Modelling):
    - 3D MHD modelling of tokamak plasma instabilities;
    - Plasma simulation code development.

    - Tokamak physics, preferably in the area of disruptions and their mitigation;
    - Programming languages and analysis software (e.g. C++, Fortran, Python, Matlab or similar);
    - Interacting and collaborating with a wide scientific community;
    - Writing and recording publications in recognized scientific and technical journals;
    - Codes and analysis tools addressing aspects of plasma disruptions (e.g. 2D equilibrium solvers, 1D or 2D transport solvers, stability analysis tools, material heat impact codes, or field line tracing codes), an advantage.
- ***Behavioral Competencies:***
    - Collaborate: ability to facilitate dialogue with a wide variety of contributors and stakeholders;
    - Communicate Effectively: ability to adjust communication content and style to deliver messages to work effectively in a multi-cultural environment;
    - Drive results: ability to persist in the face of challenges to meet deadlines with high standards;
    - Manage Complexity: ability to analyse multiple and diverse sources of information to understand problems accurately before moving to proposals;
    - Instill trust: Ability to apply high standards of team mindset, trust, excellence, loyalty and integrity.

The following important information shall apply to all jobs at ITER Organization:

- Maintains a strong commitment to the implementation and perpetuation of the ITER Safety Program, ITER Values (Trust; Loyalty; Integrity; Excellence; Team mind set; Diversity and Inclusiveness) and Code of Conduct;
- ITER Core technical competencies of 1) Nuclear Safety, environment, radioprotection and pressured equipment 2) Occupational Health, safety & security 3) 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 work on beryllium-containing components. In this case, you will be required to follow the established ITER Beryllium Management Program for working safely with beryllium. Training and support will be provided by the ITER Organization;
- May be requested to be part of any of the project/construction teams and to perform other duties in support of the project;
- Informs the IO Director-General, Domain Head, or Department/Office Head of any important and urgent issues that cannot be handled by line management and that may jeopardize the achievement of the Project’s objectives.