Job Title: Postdoctoral Researcher, Diagnostics Systems IO-PDR-8 & IO-PDR-11

Requisition ID **6804** - Posted - (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.

ITER Organization (IO) is an Equal Opportunity/Inclusive organization committed to diversity in the workplace, with diversity and Inclusiveness being one of the ITER Values.

As IO attracts and retains people coming from a vast array of different backgrounds and cultures, bias and exclusion cannot be tolerated. IO believes it is our diverse perspectives and backgrounds 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.

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: 15/01/2023
Domain: Engineering Domain
Department: Engineering Design Department
Division: Port Plugs & Diagnostics Division
Section: In-Vessel Diagnostics Section
Group: Laser and Microwave Systems
Job Family: Scientific Coordination
Job Role: Post Doc Researcher
Job Grade: P1
Language requirements: Fluent in English (written & spoken)
Contract duration: 2 years

Two positions

Purpose

As a Postdoctoral Researcher, you will propose, assess, model and develop design solutions for diagnostic systems. The aim will be to find improvements in the areas of: measurement performance, availability, reliability, maintainability, operability and cost effectiveness. This will be achieved by assessing proposed design solutions by ITER partners, proposing alternative design solutions, assessing ability to achieve

measurement requirements, assessing maintainability during operation, documenting system interfaces and system integration and contributing to formal design review of the system.

Background

ITER employs multiple diagnostics for measurements that are critical to the successful operation of the machine and to develop equivalents for future devices, including:

- An erosion monitor employing holographic interferometry techniques;
- An endoscope system combining electrostatic sampling and remote viewing techniques;
- Laser-driven systems to analyze first wall surface content spectroscopically, using in-situ Laser induced desorption and breakdown techniques and off-line sample analysis;
- A core Thomson scattering system with two-wavelength capability;
- An edge Thomson scattering system overlapping with the core range;
- A multi-beam divertor Thomson scattering system, combined with Laser Induced Fluorescence;
- Several interferometric and polarimetric systems.

Work on these diagnostics is performed in close collaboration with IO stakeholders and industrial partners. The systems have mostly concluded their conceptual designs and are in the early detailed to final design stages.

Key Duties, Scope, and Level of Accountability

- Carries out original research under an agreed program in support of the development of design solutions;
- Develops models of operation of the systems;
- Assesses the performance characteristics of the systems and proposes design improvements;
- Develops the methods of operation and synthetic diagnostics;
- Develops R&D proposals, ensures their placement and assesses the results;
- Assists the responsible officers with system enhancements and critical reviews;
- As appropriate, establishes collaborations with researchers in related areas in the ITER Members;
- Publishes the results of research in appropriate conference proceedings and refereed journals;
- 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 innovative design solutions and performance improvements to diagnostic systems;
- Produces clear analyses to support design choices;
- Sets up appropriate multi-physics models for engineering benchmarking;
- Evaluates errors and assesses performance of algorithms with realistic error sources;
- Generates clear, publication-quality material for conferences and journals.

Experience & Profile

- ***Professional Experience:***
  - Minimum 2 years' experience of complex optical instrumentation systems, preferably with experimental involvement.
- ***Education:***
  - PhD degree or equivalent in Physics or Engineering field or other relevant discipline;
  - 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).
- ***Other requirements:***

- 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.

- ***Technical competencies and demonstrated experience in:***
  - Physics or engineering, with emphasis on lasers, optics and data analysis.
  - Awareness of computer science, with some experience in coding algorithms;
  - Ability to adapt easily;
  - Producing clear technical documentation and publishing or presenting technical and/or scientific reports on specific topics;
  - Experience on tokamak engineering would be an advantage.
  - Experience of optical design software would be 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 prioritize tasks and to meet deadlines with high standards;
  - Manage Complexity: Ability to analyze 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.

Others Necessary qualifications

- The applicant must have received their PhD since 1 January 2019, or must receive their PhD prior to the deadline for beginning the Fellowship at the ITER Organization.
- The e-Recruitment system will require you to:
  1) Fill-in an online application file;
  2) Upload your Curriculum Vitae (including a list of your publications and photocopies of your highest academic qualification) merged in one unique PDF document;
  3) Upload a letter of motivation (limited to 1 page) merged with at least two letters of recommendation into one unique PDF document.

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 (Knowledge of these competencies may be acquired through on-board training at basic understanding level for all ITER staff members) :
  1) Nuclear Safety, Environment, Radioprotection and Pressured Equipment
  2) Occupational Health, Safety & Security
  3) Quality Assurance Processes
- ITER Core Behavioral Competencies :
  1) Collaborate: Ability to facilitate dialogue with a wide variety of contributors and stakeholders
  2) Communicate Effectively: Ability to adjust communication content and style to deliver messages to work effectively in a multi-cultural environment
  3) Drive Results: Ability to persist in the face of challenges to meet deadlines with high standards
  4) Manage Complexity: Ability to analyze multiple and diverse sources of information to understand problems accurately before moving to proposals

5) Instill Trust: Ability to apply high standards of team mindset, trust, excellence, loyalty and integrity

- 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.