Postdoctoral Researcher, Imaging, Metrology & Inspection IO-PDR-5 & IO-PDR-7

Job Req Id: 6601

Job Req Status: Open

Application deadline: 2022/10/31

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: 31/10/2022

Domain: Engineering Domain

Department: Engineering Design Department

Division: Port Plugs & Diagnostics Division

Section: Diagnostic Engineering Section

Job Family: Scientific Coordination

Job Role: Post Doc Researcher

Job Grade: P1

Language requirements: Fluent in English (written & spoken)

Contract duration: 2 years

Two openings

Purpose

As an Imaging, Metrology, andInspection Postdoctoral Researcher, you will carry out original research under an agreed program in support of the development of imaging metrology systems and inspection and maintenance equipment for ITER diagnostics and their services. You will need to contribute to the development of remotely-operated, laser based systems to monitor the inner surface of the ITER vacuum vessel, as well as to support the design of mechanical and other optical systems to monitor the condition of the first confinement elements, such as diagnostic windows and electrical feedthroughs. You will also participate defining interfaces between diagnostics systems, nuclear safety and maintenance and remote handling tools to ensure that all requirements for metrology and maintenance are met.

Background

On ITER, a large set of plasma diagnostics and other equipment are integrated in the upper (x14), equatorial (x8) and lower (x3) ports, into dedicated housing structures incorporating support equipment.

The integrated ports, i.e. the port housing structures assembled with diagnostic systems, are also subject to the harsh ITER environment, must comply with defined (safety) requirements, and must also be installable, operable and maintainable consistent with the ITER facility requirements, i.e. with the highest possible level of standardization and commonality.

To design and build the diagnostic systems, the 7 Domestic Agencies (DAs) are contributing in-kind, under functional specifications Procurement Arrangements (PAs) while the ITER Organization (IO) also undertakes directly parts of the ITER diagnostics and integration scope. The Diagnostic Engineering (DE) Section provides engineering justification and support to diagnostic developers at IO and DAs. Also, DE section supports technical interface development with other plant systems to ensure that diagnostic systems are designed and developed to fulfil their mission.

Key Duties, Scope, and Level of Accountability

- Carries out original research under an agreed program in support of the development of imaging metrology systems, inspection and maintenance equipment for ITER diagnostics and their services, including, but not limited to:
  - Metrology and Control technology
  - Laser and optical systems
  - Remotely operating and maintenance technology
  - Fusion plasma diagnostics
  - Electrical engineering
  - Mechanical engineering/ structural analysis
  - Nuclear Safety
  - Vacuum technology
- Carries out supportive analysis and simulations to demonstrate technical feasibility of equipment for imaging metrology, inspection and maintenance of ITER diagnostics;
- Supports preparation of technical documentation required for the development of imaging metrology systems and inspection and maintenance equipment for ITER diagnostics;
- Supports the design of mechanical and other optical systems which monitor the condition of the first confinement elements, such as diagnostic windows and electrical feedthroughs;
- Support development of interfaces between diagnostic systems, their services and other technical systems;
- As appropriate, establishes collaborations with researchers working 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, weekends and public holidays.

Measure of Effectiveness

- Contributes effectively to progress in the area of imaging metrology systems, inspection and maintenance equipment defined by the agreed research or engineering program;
- Supports team activities efficiently in the relevant area of the ITER Project;
- Produces accurate and innovative studies within the defined timeline, writing reports and giving presentation on these researches or cases;
- Interacts well and communicates with colleagues at all levels;
- Generates clear publication-quality material for conferences and journals.

Experience & Profile

- ***Professional Experience:***

- Minimum 5 years' experience in imaging metrology and the design of mechanical and other optical systems in line with the specific duties.
- ***Education:***
  - PhD 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).
- ***Technical experience and demonstrated competencies in:***
  - Imaging Metrology: experience in mechanical and optical design and operation of imaging metrology systems in large installations or engineering projects based, for example, on laser-aided technology;
  - Design or maintenance of mechanical and other optical systems, designed to transmit light, such as vacuum windows, or electrical feedthroughs which are used to connect electrically systems located in high vacuum environment;
  - Design or operation of equipment for maintenance or replacement of failed components;
  - Demonstrating "out of the box" thinking and ability to adapt easily;
  - Producing clear technical documentation and publishing or presenting technical and/or scientific reports on specific topics;
  - Proficient in MS office software;
  - Using computational methods to perform physics or engineering analysis would be an advantage;
  - Problem Solving: Assessing problems, identifying root causes and reaching practical solution.
- ***Behavioral Competencies :***
  - Collaborate: Ability to conduct dialogues with a wide variety of actors and stakeholders;
  - Communicate: 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 gather multiple and diverse sources of information to understand problems accurately before moving to proposals;
  - Ethical values to instill trust: Ability to apply high standards of team mindset, trust, excellence, loyalty and integrity and to adapt to cultural diversity.

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 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.