Job Title: Postdoctoral Imaging Systems Researcher IO-PDR-4

Requisition ID **6280** - 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.

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: 03/07/2022
Domain: Engineering Domain
Department: Engineering Design Department
Division: Port Plugs & Diagnostics Division
Section: Ex-Vessel Diagnostics Section
Group: Not applicable
Job Family: Scientific Coordination
Job Role: Post Doc Researcher
Job Grade: P1
Language requirements: Fluent in English (written & spoken)
Contract duration: 2 years

Purpose

As a Post Doc for the Development of ITER Imaging Systems, you will support the development of the Visible and Infrared diagnostics systems for the ITER machine. You will define Research & Development (R&D) and prototyping programs in support of these systems, including R&D with external collaborators. You will also support the validation of the performance and engineering requirements of ITER Imaging Systems through the various developments stages and review gates, until commissioning and operation.

Background

The aim of diagnostics is to provide the measurements necessary to control the plasma and first wall processes in operation to achieve the ITER goals and to gain the knowledge needed for future reactor design. The Port Plugs and Diagnostic Integration Division provides all the Diagnostics for ITER, along with the engineering infrastructures and test systems to support these and guides them through design, manufacturing, installation and commissioning, always keeping efficient operation in view.
The Ex-Vessel Diagnostics Section (EVD) prepares 32 diagnostic projects to support ITER Operation. The current position is for a Post Doc researcher in the in the Heat and Imaging diagnostics cluster within the (EVD) diagnostics section. Heat and Imaging diagnostics will be used for measurements of the

temperature of the plasma facing components, plasma emission in the visible waveband, flows in the plasma boundary, energetic particles, plasma radiation, and for imaging the plasma facing components between plasma pulses. The Visible and Infrared diagnostics in this cluster are: Equatorial and Upper port Visible and Infrared Wide Angle Viewing Systems, Divertor Infrared Thermography, Divertor Flow Monitor, In-vessel Lighting System and Scintillator-based Fast Ion Loss Detector. These diagnostics feature complex mirror and lens assemblies, and camera systems and employ sophisticated image processing techniques.

Key Duties, Scope, and Level of Accountability

- Carries out original research under an agreed program in support of the development of the Visible and Infrared diagnostics systems for the ITER Project;
- Supports the mechanical design of subsystems and associated engineering validation for ITER Imaging systems;
- Contributes to performance assessment and design optimization to meet measurement requirements;
- Supports the definition of physical and functional interfaces and integration of ITER Imaging systems;
- Explores and defines prototypes and R&D for ITER Imaging systems;
- Supports the development of the calibration techniques for ITER Imaging systems;
- Explores the image processing and enhancement for ITER Imaging 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 fusion science or technology 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 effectively with colleagues at all levels.

Experience & Profile

- ***Professional Experience:***
  - Minimum 3 years' experience in design and/or operation of Visible and Infrared diagnostics systems.
- ***Education:***
  - PhD or equivalent in Physics or Engineering, 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 competencies and demonstrated experience in:***
  - Plasma Diagnostics: Awareness of infrared and visible imaging diagnostics, with experience in surface temperature measurements and/or plasma imaging;
  - Mechanical engineering: Experience in mechanical design of complex systems and design validation by numerical simulations would be advantageous;
  - Problem Solving: Assessing problems, identifying root causes and reaching practical solution;

- 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;
- Using computational methods/software such as e.g. Matlab, ANSYS, Solidworks to perform physics or engineering analysis would be an advantage;
- Experience on tokamak engineering/within a fusion environment would be an advantage.

- ***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

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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.