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Ref. IO2153 - 8/8/2019

Neutral Beam Testing Facility Scientist TED-171

Main job Plasma physics

Department TED / Tokamak Engineering Department

Division TED / Heating & Current Drive Division

Section TED / HCD / Neutral Beam Section

Job Family Scientist-2

Application Deadline (MM/DD/YYYY) 09/10/2019

Grade P3

Direct employment Not required

Purpose To be responsible for incorporating the state of the art Neutral Beam (NB) physics into the NB design for ITER' systems by contributing to commissioning and operational campaigns in Neutral Beam Testing Facility (NBTF) in Italy. To participate in NB experiments conducted in Institute for Plasma Physics (IPP), in Germany, and in Indian Neutral Beam Test Facility, Institute for Plasma Research (IPR). This position is to be based at the ITER Organization with frequent travel required in Italy, India, or Germany for extended periods.

Background:

At ITER NBTF, Padova, a 100kV Ion Source Facility called SPIDER (Source for Production of Ion of Deuterium Extracted from Radio Frequency) has been in operation since 2018 while a 1MV beam facility called MITICA (Multi Megavolt ITER Injector & Concept Advancement) is under construction (which is planned to be operation in 2023). IPP operates two test beds BATMAN and ELISE (Beam sources which are 1/8th and 1/2 of the size of the ITER Beam source, respectively). The Indian Neutral Test Facility envisages the operation of full Beam Line of Diagnostic NB (DNB) line of 100keV energy. The experience gained in these facilities is to be employed in the construction and operation of ITER Heating NB (HNB) and DNB. An additional challenge to be addressed in realizing the ITER systems is to make them compatible with fusion nuclear environment.

Main duties / Responsibilities Ensures that the experiments are primarily aimed to meet ITER NB needs, by contributing to the definition and execution of NBTF experimental campaigns; Maintains up to date knowledge regarding NB physics and technology worldwide, utilizes it in ITER's NB development and disseminates it with NB colleagues. Builds on experience from the construction and operation of NBTF and from the NB operations at IPP and IPR facilities and identifies lessons learned to define the optimized requirements for HNB and DNB, whilst paying specific attention to customization with respect to ITER's quality and safety requirements. Prepares and maintains up to date documentation for the experimental outputs and for the changes in configuration; Liaises with relevant NB components engineers and communicates changes in component design, if any, which come as recommendation from the NBTF operations; Provides expertise to the NB team, throughout the design and manufacturing phases of NB components to ensure the system meets quality and safety requirements; Identifies and undertakes potential additional Research & Development (R&D) needed to achieve ITER's NB parameters when necessary; Issues progress reports on NB physics and technologies, monitors and reports, on his/her part, variances on - technical, cost and schedule aspects of NBTF project; 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.

Measures of effectiveness Ensures that the scientific/technical solutions to ITER NB systems are properly adopted from NBTF construction and operational activities; Controls efficiently that experiments fulfil IO NB needs; Effectively incorporates the state of the art NB development into the ITER NB systems; Produces and maintains high quality scientific and technical documentation of the experimental outputs;

	Identifies any scientific/technical issues for NBT and NB systems or interfaces, and manages them effectively during their life cycle; Issues the deviation and non-conformity reports and manages efficiently their progress through the relevant QA processes on an as needed basis.
Level of study	PhD or equivalent degree
Diploma	Physics, Engineering or other relevant field
Level of experience	At least 6 years
Technical experience/knowledge	At least 6 years' experience in High Power Neutral Beam Systems, especially in their design and operation within an international project; Technical Competencies and demonstrated experience in: Publishing in recognized scientific journals and or present technical and/or scientific reports on NB systems; Writing and reviewing high standard progress reports and technical specifications, providing technical instructions and technical guidance; Analyzing and resolving complex and challenging scientific/technical issues or problems. Having good knowledge of NB Injector Physics and negative ion beam production; Using proficiently beam codes such as SLACCAD, BTR, OPERA or equivalent ones; Monitoring project by analyzing change requests impact, risks and implementing corrective action plan when necessary; Developing basic models and calculations.
General skills	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 assimilate 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 adopt to cultural diversity.
Others	The required education degree may be substituted by extensive professional experience involving similar work responsibilities and/or additional training certificates in relevant domains.
Languages	English (Fluent)

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