

Seminar

Institute for Plasma Research

- Title:** First testing results of the prototype ITER HXR-Monitor on Aditya-Upgrade tokamak
- Speaker:** Mr. Patryk Nowak vel Nowakowski
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- Date:** 16th January 2025 (Thursday)
- Time:** 11.00 AM
- Venue:** Seminar Hall, IPR

Abstract

Detecting Runaway Electrons (REs) in the ITER tokamak is critical for machine protection and physics studies [1-3]. The ITER Hard X-Ray Monitor (HXRM) has been designed to operate efficiently under harsh environmental conditions envisaged during the operation of the ITER tokamak [3]. The system will provide information on REs for their avoidance and mitigation. Unlike conventional HXRM diagnostic systems operating on the existing tokamaks, the ITER HXRM is uniquely designed for robustness where the scintillator-crystal is de-coupled from the photo-multiplier tube (PMT) and the scintillation photons are guided by the optical components up to the PMT [5-7]. It has been shown that the presently designed system could meet the measurement requirements [5] and several R&D and qualification tests were performed in laboratory environments to validate the design consideration [3-7].

However, the functionality of the system has never been tested on the tokamak environment and the testing of the HXRM performed for the first time on Aditya-Upgrade tokamak which provides a unique opportunity to gather invaluable data and insights. A couple of configurations have been tested on Aditya-Upgrade tokamak and the preliminary results are reported herein. This data will significantly contribute to validating the HXRM in a real tokamak environment and validation of the signal processing algorithms developed.

References:

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