

Seminar

Institute for Plasma Research

Title: The Development of a Time of Flight Diagnostic for energy analysis of Neutral Particles in ADITYA-U Tokamak

Speaker: Dr. Shashank Singh
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Date: 15th May 2026 (Friday)

Time: 10:30 AM

Venue: Seminar Hall, IPR

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Abstract

The development work of the Time-of-Flight (TOF) diagnostic system is in progress for plasma temperature measurement in the ADITYA-U Tokamak. In the previous presentation, we modelled the neutral flux emitted from the tokamak, optimized the TOF parameters and designed the TOF system [1, 2].

During the last five-six months, several TOF components have been fabricated and tested successfully. The chopper chamber, detector chamber, flight tube, support stands and turbo pumps are ready for assembly. The chopper chamber has been tested for the vacuum and achieved ultra-high vacuum of the order of 10^{-8} torr. The chopper motor has been successfully tested up to 30,000 rpm under ultra-high vacuum conditions of around 10^{-6} torr. The design of the ion source has been completed and its fabrication is currently under progress in the IPR workshop.

The future work will include assembly of the complete TOF system, laboratory testing of the ion source, testing of the detector system and calibration of the TOF setup with ion source and then assemble at the Aditya-U tokamak for plasma diagnostic measurements.

References:

[1] Mu, L., et al. "Development of a time-of-flight low-energy neutral particle analyzer for EAST tokamak." *Review of Scientific Instruments* 89.10 (2018).

[2] Ray, N. R. "A time-of-flight low-energy analyser (TOFLEA) of neutral atoms." *Journal of Physics D: Applied Physics* 31.9 (1998): 1071-1077.
