

Seminar

Institute for Plasma Research

Title : Particle transport in Aditya Scrape-off Layer and its relation to Discharge Density and Power using EMC3-EIRENE model

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Date : 7th August 2018 (Tuesday)

Time : 03.30 PM

Venue : Committee Room 4, (New Building), IPR

Abstract :

Numerical studies of Plasma transport have finite relevance to issues in the Scrape-off Layer of tokamaks. Many dedicated experiments and associated modelling studies can be performed in existing medium size devices like Aditya. The first 3D simulation results using the plasma neutral transport model EMC3-EIRENE shows the signature of flow shear and regions of long and short connection lengths [1]. The subsequent simulations showed trends corresponding to some measurements in ring limited Aditya and effect of steady state quasi-periodic structures and associated diamagnetic drift [2]. The recent 3D simulations show the role of perpendicular diffusive transport in a toroidally discontinuous Block limiter configuration similar to Aditya Upgrade determining recycling strength which is predicted to be moderate as compared to original Ring limiter configuration [3]. In the recently completed set of simulations we have studied the particle transport behaviour in Aditya ring limiter and block limiter configuration over a range of edge density. The perpendicular transport of particle and energy is expected to be significant in ring limiter similar to Alcator-C-Mod results in MIT where radial variation of diffusion coefficient was additionally measured. But at higher input power transport in perpendicular direction dominates in block limiter and perhaps explains subsequent impurity generation as recently observed in Aditya Upgrade [4,5].

References

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