THE SUMMARY PAGE

The cold atom densities of ohmic plasmas can be obtained from the charge-exchange NPA measurement analysis [1]. The evaluation of core neutral density in the central region of the observed plasma column for the ADITYA tokamak, as estimated on the basis of the fast charge exchange spectrum observed at CX-NPA channels and using eq.(8). Fig.6 (a) depicted a representative shot where temporal evolution of core-neutral density is evaluated. Fig.6 (b) shows histogram of neutral density of core regime estimated for of 23 plasma discharges having similar plasma parameters. It can be concluded that n_H^0 (0) ranges between ~$8x10^7$ to $5x10^8$ cm^{-3}. This value is greater in several orders of magnitude than the value of n_H^0(0) which is expected by considering the known atomic flux entering the plasma column and the penetration of such atoms to the core region with the accountability of the ionization and charge exchange processes taking place [4]. However, the n_H^0 (0) density estimated here are in close agreement with experimental investigation made before in the ADITYA tokamak using spectroscopic observations of H-alpha line [5].

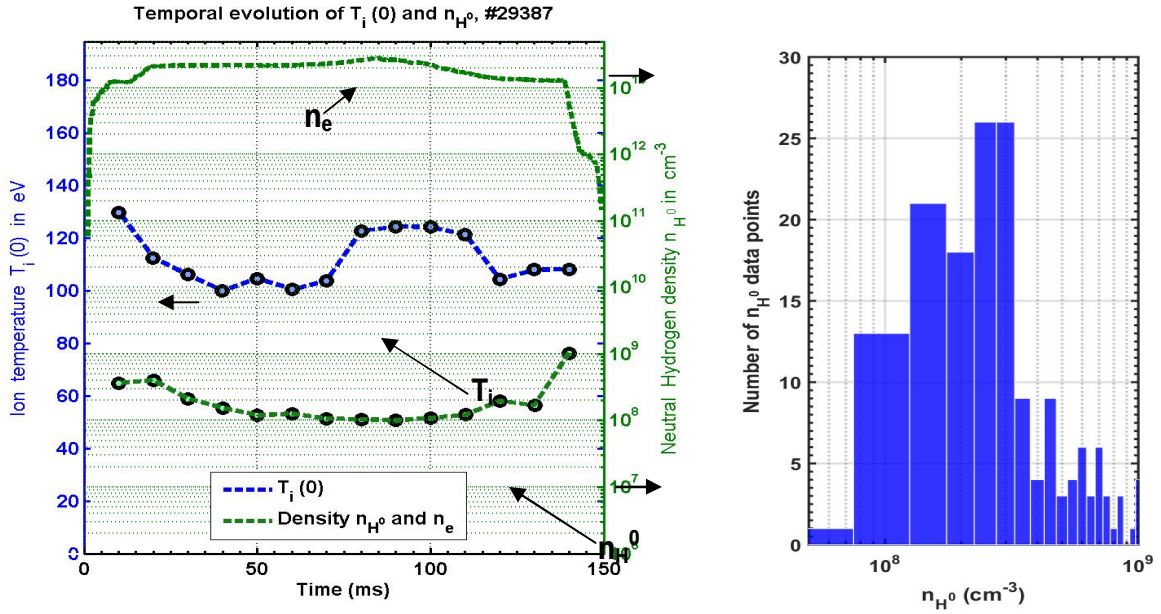

Figure-6: (a) Temporal evolution of neutral density in core regime for representative plasma discharge #29387 and (b) histogram of core hydrogen neutral density data points for 23 similar plasma discharges having Ip~80±10kA.

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