

Investigation of mechanisms for the generation of blobs/holes at the boundary of the HL-2A tokamak (O Pan, Y Xu* et al., EX/P7-29)

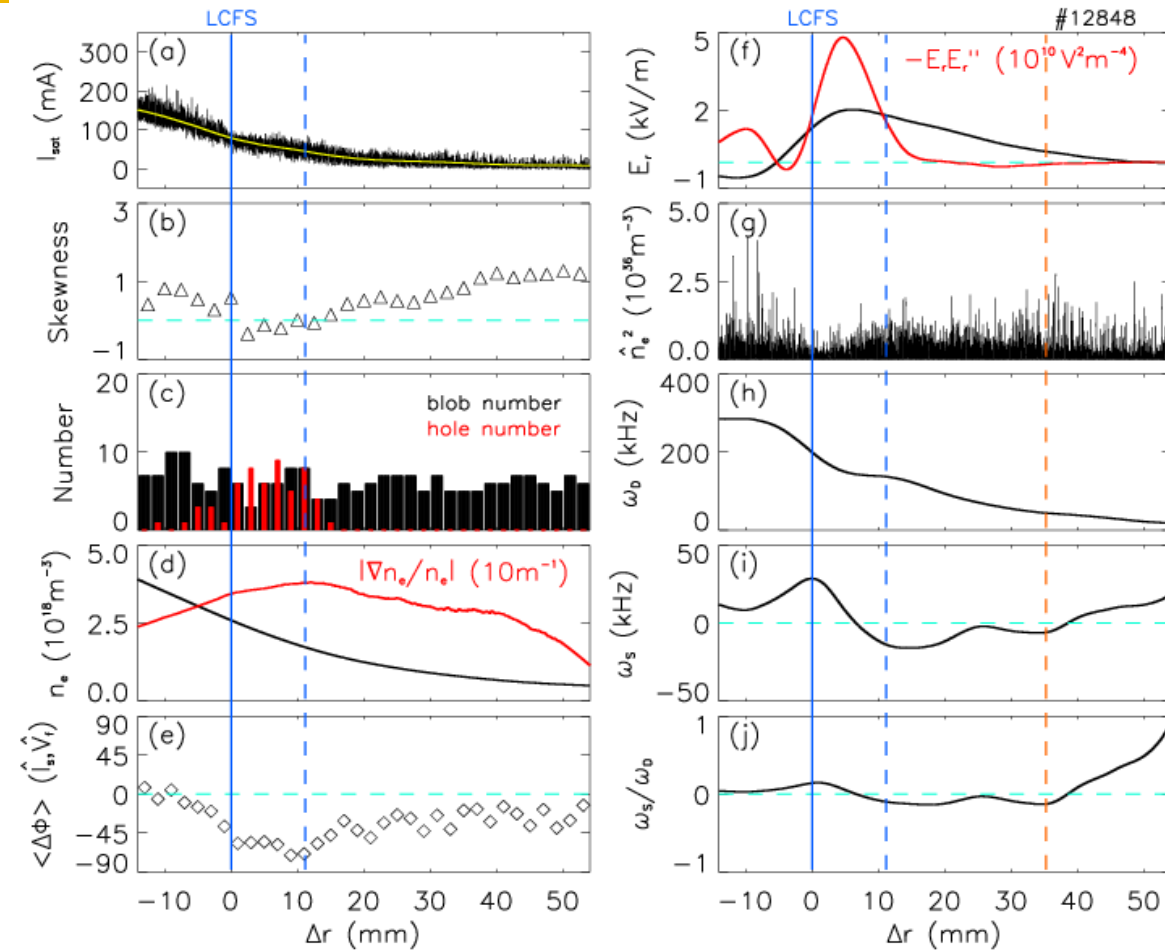


Fig. 1 Radial dependence of (a) ion saturation current I_s ; (b) skewness of \tilde{I}_s ; (c) spatial distribution of blob and hole numbers; (d) density and its scale length; (e) phase shift between \tilde{I}_s and \tilde{V}_f ; (f) radial electric field (E_r) and $-E_r E_r''$; (g) density fluctuation power; (h) rate of local turbulence drive ω_0 ; (i) rate of turbulence spreading ω_s and (j) ratio of ω_s to ω_0 .

- Three distinctive regions for blob and hole generation mechanisms:
- (i) inside the LCFS, the local density gradient is high and blobs are driven by drift-wave turbulence;
 - (ii) outside but nearby the LCFS, blobs and holes coexist. Evidence show interchange drive mechanisms;
 - (iii) in the far SOL, the density gradient is very low, the turbulence spreading plays a key role for blob dynamics.

In the hole-dominant region, the turbulence transfers energy into the $E_r \times B$ flow. Thus, the inward convection of holes fades in the vicinity of the LCFS.

