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Blob birth and propagation characteristics on the HL-2A tokamak

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ABSTRACT

Blob birth and propagation characteristics have been investigated on the HL-2A tokamak using the novel probe combination of a radial eight-probe array and a poloidal ten-probe array toroidally separated by 210 cm. Outside of the separatrix, close zero parallel wave number along a magnetic field line was found. Inside the separatrix 4–8 mm, density gradient has a maximum and the skewness is close to zero. Blob poloidal velocity changes its direction across the separatrix, which is consistent with $E \times B$ driven mechanism. Based on the significant correlation along a magnetic line, blob propagation across the separatrix in poloidal–radial plane is clearly observed with condition average. At the far SOL, blob radial velocity is 0.5–0.6 km/s, which dominates the particle loss in the SOL.