

Abstract Submitted  
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**Experimental Study of Particle Transport with SMBI and ECRH on HL-2A Tokamak** WEIWEN XIAO, Southwestern Institute of Physics, Chengdu, China, XIAOLAN ZOU, CEA, IRFM, F-13108 Saint-Paul-lez-Durance, France, XUANTONG DING, Southwestern Institute of Physics, Chengdu, China, SHAODONG SONG, CEA, IRFM, F-13108 Saint-Paul-lez-Durance, France, LIANGHUA YAO, JIAQI DONG, XURU DUAN, YONG LIU, Southwestern Institute of Physics, Chengdu, China — A spontaneous particle transport barrier has been observed for the first time in the ohmic plasma in HL-2A tokamak. This phenomenon is identified using three different methods. In the barrier region, the turbulence level has been significantly reduced and a drastic change of the turbulence poloidal rotation has been observed. Particle diffusivity and the convective velocity have been separately determined. The formation of the particle transport barrier coincides with the TEM/ITG transition via collisionality. ECRH modulation experiments have also been performed in HL-2A for particle transport investigation. Density pump-out (negative density perturbation) in the central region has been observed as in other tokamaks. Simultaneously a positive density perturbation due to the out-gassing in the peripheral region has been observed. An outward convection has been observed during pump-out transient phase.

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