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Stimulated L-H transition with SMBI in the HL-2A tokamak WULYU ZHONG, Southwestern Institute of Physics, PO Box 432, Chengdu 610041, China, XIAOLAN ZOU, CEA, IRFM, F-13108 Saint-Paul-lez-Durance, France, AUSHU LIANG, XURU DUAN, MIN XU, BEIBIN FENG, CHENGYUAN CHEN, GUOLIANG XIAO, ZHONGBING SHI, ZENGCHEN YANG, MIN JIANG, PEIWAN SHI, JIE WEN, XIANMING SONG, DELIANG YU, LINGE ZANG, LONGWEN YAN, JIAQI DONG, XUANTONG DING, YONG LIU, Southwestern Institute of Physics, PO Box 432, Chengdu 610041, China, HL-2A TEAM — In the HL-2A plasmas, the transition from low confinement mode (L-mode) to high confinement mode (H-mode) externally stimulated by supersonic molecular beam injection (SMBI) has been observed. SMBI, a fuelling tool with higher fuelling efficiency than that of gas puffing, can abruptly increases the electron density and its gradient. Then it helps to build the pedestal with steep gradient. It was found that more intense SMBI induces large turbulence intensity. Interesting, the intensity of geodesic acoustic mode (GAM) was enhanced by SMBI, then the turbulence intensity was clamped. When the plasma transited into the H-mode, the GAM disappeared. The enhanced GAM can also transits into another oscillating shear flow, limit cycle oscillation (LCO). The interplay between oscillating flows and turbulence was studied. The result suggests that the oscillating flows can be enhanced or triggered by SMBI and those flows initiate the L-H transition. Further, they play a important role in the continuous increase of the mean shear flow prior to the transition.

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