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EX/P6-19: Plasma Rotation Behavior under Lower Hybrid Current Drive and Ion Cyclotron Range of Frequency Heating on EAST

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Radio frequency (RF) wave driven plasma rotation has been considered to a potential method to provide the sufficient rotation for the steady operations of ITER or future reactor-scale devices. While substantial rotations have been observed on many devices with various auxiliary RF heating schemes, the variation among the observations requires more experimental studies. Experimental rotation observations from the tangential X-ray crystal spectrometer on EAST for both low and high confinement mode plasmas under lower hybrid current driven (LHCD) and ion cyclotron resonance frequency heating (ICRF) are presented. It was found that lower hybrid wave induces co-current core rotation change individually or combined with ICRF for both low and high confinement discharges. Rotation in H-mode plasmas scales consistently with Rice scaling. For ELMy H-modes, core rotation decreases during the ELM burst phase before reaching steady state. The change in core rotation is consistent with edge rotation change for ELM phase. It was also observed that rotation decreases or even reverses its sign for some ohmic and LHCD plasmas when impurities accumulates in the core region.

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