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Studies on ISTTOK during edge electrode biasing assisted AC operation

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It has been experimentally established in ISTTOK that edge electrode biasing under appropriated conditions improves confinement by reducing radial transport. In order to improve the repeatability and reproducibility of AC operation edge electrode biasing was used to assist the transition of plasma current applied at different time lapses of the AC discharge. This paper presents the results of these studies. It has been observed that during ISTTOK AC discharges the restart of each plasma pulse depends on factors such as machine conditioning, operating background pressure, balanced external magnetic fields and on the level of current and plasma density just before the transition of the primary current. The control of the plasma density in the quiescent phase is made just before the AC transition by means of edge polarization leading to a transitory improved confinement that could be responsible to keep a more favorable quiescent plasma conditions. In addition, applying bias during the start-up of the following AC cycle, at proper time stamps, induces favorable modifications on the pressure-like profile as measured by the Heavy Ion Beam Diagnostic.

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