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Fuelling and plasma flow change by compact torus injection into the STOR-M Tokamak[1] TAKUMI ONCHI, YELU LIU, MYKOLA DREVAL, DAVID MCCOLL, CHIJIN XIAO, AKIRA HIROSE, University of Saskatchewan, TOMOHIKO ASAI, Nihon University, SEAN WOLFE, Plasmionique — The Saskatchewan TORus Modified (STOR-M) tokamak is equipped with a Compact Torus (CT) injector for tangential (toroidal) injection of a high density plasmoid at a velocity of 150 km/s. The objectives of CT injection (CTI) are to fuel the core region of tokamak and optimize the bootstrap current in future reactors by control of the plasma pressure gradient. After CTI, the line averaged density along central chord increases from $n_e \sim \times 10^{12}$ to 1.5×10^{13} [cm^{-3}]. Measurement of soft X-ray bremsstrahlung emission profile indicates a steeper density gradient is generated after the asymmetric density profile is formed and the profile become symmetry again in STOR-M. Intrinsic impurity ion flows have been measured with ion Doppler spectroscopy. Significant radial velocity shear from center to edge region is observed even in Ohmic discharges. The toroidal flow direction is found to depend on the plasma current direction. CTI also modifies toroidal plasma flow. The edge plasma flow increases by 5 km/s 1millisecond after CTI. During these milliseconds of time, toroidal flow shear is also increased from 214.3 to 285.7 [$10^3 \times 1$/s]. A few milliseconds later than that time, plasma flow slows down, but plasma confinement is improved. Hα emission decreases by 50%.

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