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Spectroscopic measurements and impurity transport studies on MST Reversed Field Pinch TULLIO BARBUI, LORELLA CARRARO, Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy, SANTHOSH KUMAR, DANIEL DEN HARTOG, MARK NORNBERG, Department of Physics, University of Wisconsin-Madison, Madison, WI, USA — The results of impurity transport studies in MST improved confinement pulsed poloidal current drive (PPCD) and standard regimes are presented and discussed. The impurity diffusion coefficient and pinch velocity are obtained through comparing experimental impurity density time evolution and radial profiles with the results of a 1-D impurity transport code. Experimental measurements have been obtained in the past with Charge Exchange Recombination Spectroscopy for several impurity species (C, O, B, Al). In particular previous analysis of fully stripped carbon measurements showed that carbon density decays at the core and radial profile evolves into a stationary hollow shape in PPCD discharges [S Kumar, Plasma Phys. Control. Fusion, 53 (2011) 032001]. Transport code has been applied to carbon, oxygen and boron impurities in order to deduce transport coefficients profiles which lead to the experimental impurities behaviour. Finally these coefficients have been compared with those obtained for RFX-mod Reversed Field Pinch in Quasi-Single Helicity (QSH) and Multiple Helicity (MH) regimes. In RFX-mod the pinch velocity, always directed outwards, features a transport barrier preventing impurities from penetrating into the plasma, especially in QSH regime.

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