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A new technique for effective core fueling and density control in RFX-mod GIANLUCA DE MASI, FULVIO AURIEMMA, ROBERTO CAVAZZANA, EMILIO MARTINES, GIANLUCA SPIZZO, Consorzio RFX (CNR, ENEA, INFN, Università di Padova, Acciaierie Venete SpA) — High current plasmas in the RFX-mod Reversed Field Pinch device can be presently sustained either operating at low density (ne/nG <0.3, being nG the Greenwald density) or transiently at high density by pellet injection. Discharges at ne/nG >0.3 are difficult to sustain due to the high ohmic power required and a confinement properties downgrading. In these regimes, the transport mechanism results in a hollow density profile preventing an effective core fueling. A different behavior is observed in Ultra-low q configuration (q[r=a]>0), in which the increased particle diffusivity produces flat density profiles and makes easier neutral particle penetration. In this contribution we show the main results of a new method to produce a more effective core fueling based on the previous empirical observations. The idea was to produce during the discharges narrow time windows with q[r=a]≥0 values and, during this phase, to apply a strong gas puffing. This experimental condition is found to allow an increased particles core penetration. From the operational point of view, a lower input power was needed to sustain the discharges with similar core density. A deeper analysis through the ASTRA code will highlight the relation between transport properties and magnetic topology.

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