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Effect of radio-frequency power injection on impurity profile in JET plasmas L. CARRARO, Consorzio RFX-Padua, C. ANGIONI, IPP-Garching, C. GIROUD, UKAEA Abingdon UK, M.E. PUIATTI, M. VALISA, Consorzio RFX-Padua, P. BURATTI, ENEA Frascati, R. BUTTERY, UKAEA Abingdon UK, I. COFFEY, Queen's University Belfast, L. GARZOTTI, UKAEA Abingdon UK, D. VAN EESTER, LPP-ERM/KMS Brussels, L. LAURO TARONI, Consorzio RFX-Padua, K. LAWSON, UKAEA Abingdon UK, E. LERCHE, LPP-ERM/KMS Brussels, P. MANTICA, IFP Milano, M. MATTIOLI, Consorzio RFX-Padua, V. NAULIN, Risoe NL Denmark, JET-EFDA TEAM[1] — To maximize the reactivity of a fusion plasma the impurity content should be as low as possible in the plasma centre. RF power has been seen to flatten the impurity density profiles in various experiments, especially when applied to electrons and deposited in the centre. To evaluate the potentiality of such phenomenon as a means towards an active control of the impurity profiles, JET H-Mode and Hybrid discharges at ITER relevant collisionality (νeff<0.2), with and without RF power applied to electrons, have been transiently doped with traces of Ne, Ar, Ni and Mo. With RF the pinch parameter (ratio of convection velocity to diffusion) of all the injected impurities reduces remarkably or even reverses its sign and the impurity profiles are flattened or become hollow. Such beneficial effect is to be weighted by the increase of the metal content in the plasma that can result from the RF application. Quasi linear gyro-kinetic simulations (GS2) do not explain the observed outward pinch and refer the analysis to a full non linear approach.

[1]See the Appendix of M.L.Watkins et al., Fusion Energy 2006 (Proc. 21st Int. Conf. Chengdu, 2006)

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