

**ICRF heating at JET: From operations with a metallic wall to the long term perspective of a DT campaign.**

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JET is currently reaching the end of an extensive shutdown during which all the plasma facing components (PFCs) made of Carbon (C) are being replaced by beryllium (Be) and tungsten (W) ones. The first experiments with this ITER-like wall will start mid-2011 with D plasmas, continue through 2012-13 with H, <sup>4</sup>He and D plasmas and include a possible DT campaign in 2014-15. This long term plan will provide challenges for safe and reliable application of ICRF power as well as an opportunity to address important issues for ITER. This paper will review the previous JET experience and specific preparation experiments that provide the foundation for the first ICRF operation with ITER-like wall materials. Issues that will be addressed include the potential for: changes in the ICRF coupling; W impurity production from the divertor region; localized power loads on the Be wall due the RF sheaths [1]; and the impact of impurities contamination (Be vs. C) on mode conversion scenarios [3] and on the development of ICRF heating schemes for the non-activated phase of ITER [3][4]. The preparation for ICRF heating in DT plasmas will be discussed addressing: the use of improved diagnostics to further develop heating schemes such as 2<sup>nd</sup> harmonic T in DT and D minority in T rich plasmas compared with DTE1[5], and improvements to the ICRF systems that would allow the optimization of ICRF in DT experiments.

[1] L. Colas et al., this conference, [2] D. Van Eester et al. this conference, [3] M-L Mayoral et al, NF 46 (2006), [4] E. Lerche et al, this conference, [5] D. Start et al, NF 39, 199.

\* See Appendix of F. Romanelli et al., Proc. of the 23rd IAEA FEC2010, Daejeon, Korea