

Abstract Submitted
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Maximizing power dissipation by impurity seeding on JET with metal plasma facing components¹ MARCO WISCHMEIER, IPP Garching, ALEXANDER HUBER, FZ Jülich, CHRISTOPHER LOWRY, European Commission, COSTANZA MAGGI, CCFE, MATTHEW REINKE, ORNL, JET CONTRIBUTORS* TEAM — A reactor such as DEMO will operate at considerably higher total heating power even when compared to ITER. This will require mitigating a much higher power flux density in the Scrape-Off Layer. A highly detached divertor will be required for maximizing the lifetime of the eroding plasma facing components, PFCs, in the divertor as well as for operating within the engineering limits expected for the power handling components. A dissipation of $\sim 95\%$ of the total heating power will be needed, with more than 70% being radiation on closed field lines. On JET with metal PFCs highly radiative conditions with N₂, Ne, both combined and Ar as radiators were approached in H-mode plasmas. For all seeding species radiative power fractions larger than 70% were achieved under stable discharge conditions with a concentration of the radiation in the X-point region. Detachment along both divertor plates was complete. A degradation of the pedestal profile was compensated by steeper core profiles.

¹*See the Appendix of F. Romanelli et al., 25th FEC 2014, Russia, Supported by EUROfusion No 633053

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