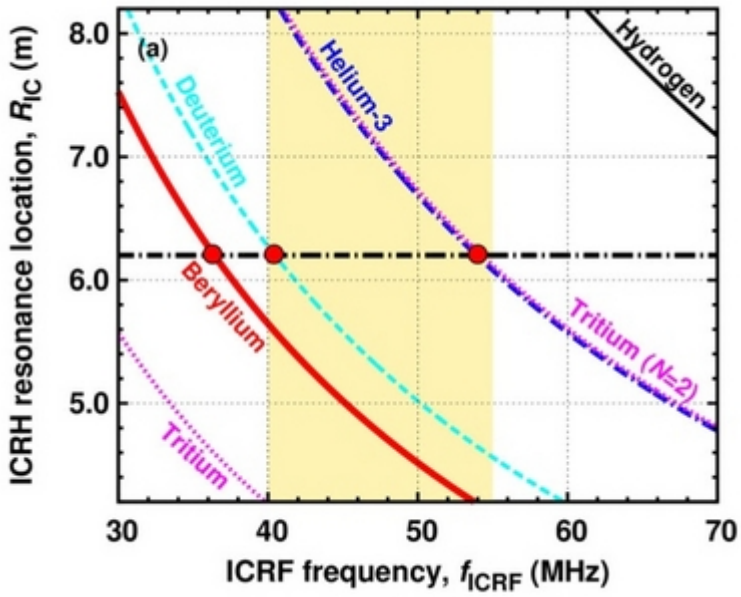
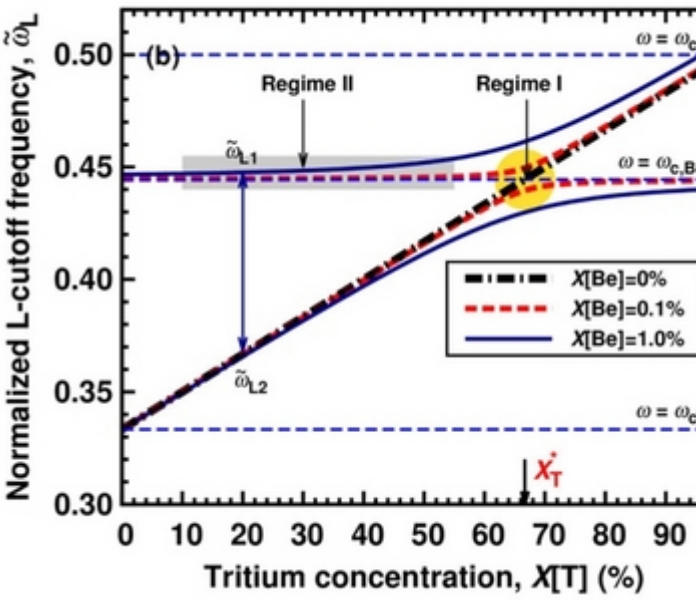
BSC Fusion Team publishes a paper in Physics of Plasmas on novel technique to heat fusion plasmas to high temperatures

Physics of Plasmas, a renowned leading journal in the field of plasma physics and fusion research, has recently published a paper titled *A new ion cyclotron range of frequency scenario for bulk ion heating in deuterium-tritium plasmas: How to utilize intrinsic impurities in our favour*. This paper reports on a new heating scheme for fusion plasmas and the BSC Fusion Team features among the authors together with other international institutions including LPP-ERM/KMS (Belgium), IPP-Garching (Germany) and CEA/IRFM (France). The authors plan to do some experimental tests of the proposed new scheme in the coming months on the Europe's largest fusion device, the JET tokamak located near Oxford in the UK, the ASDEX Upgrade tokamak at Max Planck Institute for Plasma Physics (Garching, Germany) and on the Alcator C-Mod tokamak located at the Plasma Science and Fusion Center of MIT.

Paper abstract: A fusion reactor requires plasma pre-heating before the rate of deuterium-tritium fusion reactions becomes significant. In ITER, radio frequency (RF) heating of He-3 ions, additionally puffed into the plasma, is one of the main options considered for increasing bulk ion temperature during the ramp-up phase of the pulse. In this paper, we propose an alternative scenario for bulk ion heating with RF waves, which requires no extra He-3 puff and profits from the presence of intrinsic Beryllium impurities in the plasma. The discussed method to heat Be impurities in D-T plasmas is shown to provide an even larger fraction of fuel ion heating.

View paper online here: http://dx.doi.org/10.1063/1.4928880.





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