The OXB double mode conversion process in over dense plasma

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Abstract

Electron cyclotron resonance heating (ECRH) in nuclear fusion devices such as tokomaks and stellarators, owing to overdense plasma is inefficient. This inefficiency is due to reflections of the waves at the so-called wave cut-offs. A two-step linear conversion process from ordinary mode (O mode) into extraordinary mode (X mode) and finally to slow electrostatic electron Bernstein wave (EBW), (OXB), can overcome this inefficiency and eliminate any density limits. In this article, we examine the transmission coefficient of O-X mode conversion for the optimal and density fluctuated launch conditions with parameters corresponding to the Wendelstein 7-X (W7-X) stellarators.

Recent Publications

1. S M Sadat Kiai, Shirin Adlparvar (2014) Dense plasma focuses for space technology. Journal of Space Exploration 3 (1): 33-37.

2. S M Sadat Kiai, M Elahi, S Adlparvar *et al* (2011) Preliminary results of IS plasma focus as a breeder of short-lived radioisotopes $^{12}C(d,n)^{13}N$. Journal of Fusion Energy 30 (2): 111–115.

3. S M Sadat Kiai, S Adlparvar, A Zirak, S Alhooie *et al* (2010) Preliminary tests of a Paul ion trap as an ion source. Journal of Fusion Energy29 (5): 412–415.



Biography

S Adlparvar is a PhD candidate in Atomic Physics in Azad University. She has research experience on nuclear fusion with dense plasma focus device and Paul ion trap. She is also involved in teaching physics to under graduate students.

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