

Abstract Submitted
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Propagation and absorption of ion cyclotron resonant waves in an FRC configuration FRANCESCO CECCHERINI, TriAlpha Energy Inc., Rancho Santa Margarita CA, USA, LAURA GALEOTTI, TriAlpha Energy Inc., Rancho Santa Margarita CA, USA, MARCO BRAMBILLA, Max Planck Institute fuer Plasmaphysik, EURATOM Association, Germany, DANIEL C. BARNES, XI-AOKANG YANG, TriAlpha Energy Inc., Rancho Santa Margarita CA, USA, TAE TEAM — The generation and propagation of an ion cyclotron resonant wave is studied in a Field Reversed Configuration (FRC) plasma which includes at least two different ion species. We consider minority heating as the main process through which energy is transferred to the ions and we take two scenarios into account. In the first scenario the charge/mass ratio of the minority species is higher than the corresponding ratio of the majority species and in the second scenario the opposite is considered. The first case is particularly interesting because it allows the study of absorption rates of ions for frequency values higher than the maximum cyclotron frequency of the majority species and lower than the maximum cyclotron frequency of the minority species. In such a frequency range the majority species can absorb energy through second or higher harmonic processes only. Because of the very peculiar magnetic field structure of FRCs, the second scenario may be required in case the resonance process must take place in the very inner regions of the plasma. In this latter case the electron absorption may play a very significant role and we give a preliminary description of the key parameters in the antenna configuration, which can reduce or enhance such an effect.

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