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Finite Larmor Radius approximation for waves propagation in cylindrical plasma configurations LAURA GALEOTTI, FRANCESCO CECCHERINI, Dept. of Physics, UNIPI, Italy and Tri Alpha Energy Inc., USA, MARCO BRAMBILLA, Max Planck Institute fuer Plasmaphysik, Germany, DANIEL C. BARNES, Tri Alpha Energy Inc., USA, FRANCESCO PEGORARO, Dept. of Physics, UNIPI, Italy — We present an analytical derivation in cylindrical geometry of the Finite Larmor Radius approximation for the wave equations in the cyclotron frequency range and show a set of numerical results obtained with a new extended version of the code FELICE [1,2] which allows for arbitrary profiles of field, densities and temperatures. Obtaining a cylindrical FLR approximation is of great relevance for studying the wave propagation in plasma configurations like FRC's and theta-pinches in particular. The generic configuration we consider can be divided in the radial direction in two regions, i.e, a "plasma region" and a "vacuum region". In the former the wave propagation is computed numerically from the FRL approximation found, in the latter instead a general analytical solution has been calculated and implemented in the code. A detailed description on how to ensure both the overall causality of the propagation process and the correct matching conditions for the antenna surface and the vacuum/plasma surface is shown as well.
[1] M. Brambilla, Plasma. Phys. and Contr. Fus. **31**, 723 (1989)
[2] M. Brambilla, Plasma. Phys. and Contr. Fus. **35**, 41 (1993)

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