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A new iterative method to compute the dielectric tensor in the low-frequency wave code LEMan N. MELLET, W.A. COOPER, M. JUCKER, J.P. GRAVES, L. VILLARD, CRPP, EPFL, Association Euratom-Confédération Suisse, CH-1015 Lausanne, Switzerland, THEORY GROUP TEAM — The full-wave code LEMan is designed to perform computation in both 2D and 3D geometries. It uses a warm formulation in order to model, for example, the Kinetic Alfvén Wave and the electron Landau damping. One of the main difficulties emerging with this modelisation is the determination of the parallel wave vector. Thus a method based on a polynomial matrix inversion has been implemented. Results were obtained in the Alfvén domain for both tokamak and stellarator configurations, including LHD. On the other hand, for ICRH cases, the parallel wave vector has to be approximated because the matrix is ill-conditioned. A new iterative method has been consequently developed to preclude imposing approximations. The first results obtained with it are in good agreement with those computed with the method previously implemented. Another important advancement is the introduction of a bi-Maxwellian distribution function to model anisotropy in the velocity space for fast ions. Furthermore, the LEMan code is now coupled with the single particle code VENUS, in order to model RF heating in a self-consistent way.

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