Abstract Submitted for the DPP05 Meeting of The American Physical Society

New capabilities of TOPICA code: lower hybrid antennas and full toroidal plasmas V. LANCELLOTTI, D. MILANESIO, R. MAGGIORA, V. KYRYTSYA, L. VALITUTTI, G. VECCHI, Dipartimento di Elettronica, Politecnico di Torino, 10129 Torino, Italy, J.C. WRIGHT, P.T. BONOLI, Plasma Science and Fusion Center, M.I.T., Cambridge, MA 02139 USA — TOPICA (TOrino Polytechnic Ion Cyclotron Antenna) code is a numerical suite aimed at the performance prediction and analysis of plasma-facing antennas. It is capable of handling real-life 3D antenna geometries (with housing, Faraday screen, etc.) as well as a realistic plasma model, including measured density and temperature profiles. Thanks to the approach underlying the code (i.e. the formal splitting of the problem into two parts: the vacuum region around the antenna and the plasma region inside the toroidal chamber), TOPICA can be extended to deal with lower hybrid (waveguide grill) antennas, as well as toroidal plasma. TOPICA has been upgraded to simulate and design lower hybrid (waveguide grill) antennas. On the other hand, to include plasma curvature effects, TOPICA can adopt the plasma impedance matrix computed independently via the fully toroidal TORIC plasma code. This way TOPICA both provides more accurate antenna parameters and yields the proper input (i.e. the electric field in front of the Faraday shield) to self-consistently run TORIC in a subsequent plasma analysis. In this work an account for the new capabilities of TOPICA will be presented.

> Giuseppe Vecchi Dipartimento di Elettronica, Politecnico di Torino, 10129 Torino, Italy

Date submitted: 21 Jul 2005

Electronic form version 1.4