

## **Modeling of the EAST ICRF Antenna with ICANT Code**

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A new ion-cyclotron range of frequencies (ICRF) antenna for Experimental Advanced Superconducting Tokamak (EAST) is in project. The antenna configuration is based on the Resonant Double Loop (RDL) [1] concept which used on Tore Supra launchers has proved its high power density capabilities. It consists of 2-toroidal RDL units side by side, mounted inside a large mid-plane port. The new ICRF antenna is planned for coupling 4MW RF power into plasma, and operation frequency range is from 30 to 110MHz.

The ICANT code computes self-consistently the surface current distribution on a 3D antenna model radiating in a plasma or vacuum and has been used to analyze the coupling properties of various antenna models. [2] In this work, this code has been used to model the new ICRF antenna and assess its coupling capabilities, as well as the near-fields in front of the antenna in order find the sources of the high electric near-by fields and to find the most dangerous points in the antenna area. Comparisons are also made with Transmission Line theory (TL) using a simplified antenna model. The results show a good agreement.

[1] T. L.Owens, F.W. Baity et al., Radio Frequency Plasma Heating: AIP Conf. Pro. 129,(1985)95-98.

[2] S. P'ecoul, S. Heuroux, R. Koch, G. Leclert, Comput. Phys. Commun.146 (2002) 166–187.