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2P19 - 3D ICEPIC SIMULATION OF AN X-BAND RELATIVISTIC TWISTRON

Tuesday 25 June 2019 13:00 (1h 30m)

We present results of 3D ICEPIC simulations of a relativistic X-band (9.9 GHz) twistron based on a design reported in the literature. Here we report on progress made in our hot test simulations of this device. Full 3D ICEPIC simulations were made using the supercomputers of the DoD Supercomputing Resource Centers (DSRCs). Our hot test simulations used a 373 kV, 6.5 kA annular beam with 13.75 mm inner radius, 15.25 mm outer radius, focused with a 0.7 T axial magnetic field; the ICEPIC cell size used for our simulations were typically 0.25 mm. The 0.57 GW output RF power leaves the twistron as a TM01 mode via a downstream cylindrical waveguide. We have made some improvements to the twistron including adding a downstream beam catcher after the slow wave structure.

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