INTEGRATING A TRAVELING WAVE TUBE INTO AN AECR ION SOURCE

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Abstract

A RF system of 500W - 10.75 to 12.75 GHz was designed and integrated into the Advanced Electron Cyclotron Resonance (AECR) ion source of the 88-inch Cyclotron at Lawrence Berkeley National Laboratory. The AECR produces ion beams for the Cyclotron giving large flexibility of ion species and charge states. The broadband frequency of a Traveling Wave Tube (TWT) allows modifying the shape of the annular ellipsoidal-shaped volume that couples and heats the plasma. Details of the RF source and Automatic Gain Control Unit designs for the TWT and integration with the AECR source are provided.

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