



## Design Study of 455 GHz,1.027 kW Second Harmonic Gyrotron Oscillator

By Aras Saeed

LAP Lambert Academic Publishing Nov 2013, 2013. Taschenbuch. Book Condition: Neu. 220x150x12 mm. Neuware - The present work, the electron-cyclotron maser (ECM) oscillators are high power sources of microwave radiation and have applications in fusion plasma heating diagnostics with potential for radar and telecommunications systems are studied. Electron cyclotron masers are based on the cyclotron resonance maser (CRM) instability between a gyrating relativistic electron beam moving in a (usually uniform) guide magnetic field and electromagnetic radiation, are used. So this project deals with the design study of a second harmonic gyrotron operating at the mode with 455 GHz output frequency. To come across with all these requirements, all relevant equations were derived and solved numerically by the finite difference technique. A computer code has been fully constructed and used to study the design requirements and properties of the relativistic electron beam (REB) diode which includes the various beam parameters such as: the electron energy, beam current, beam guiding radius and pitch factor. The expressions for the RF field components were derived and their configurations were followed along with bunching process generation of the electrons along the cavity resonator and presented graphically. 192 pp. Englisch.



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