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Title:New power records of sub-terahertz gyrotron with second-harmonic oscillation
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Abstract:High-power sub-terahertz pulse gyrotrons are under development in FIR FU for application to collective Thomson scattering (CTS) measurement on fusion plasmas, especially on high-density plasmas such as those produced in LHD. Recently, we achieved a new power record of 62 kW at approximately 388 GHz with second-harmonic (SH) oscillation. Following this result, we modified the electron gun of the gyrotron to couple the electron beam more strongly to another oscillation mode that has a peak coupling coefficient two times as large as that of the 62kW mode. Oscillation tests with the new mode attained higher power of 83 kW at about 389 GHz. These results constitute new second-harmonic-oscillation power records for sub-terahertz gyrotrons.
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Inspec controlled terms:electron guns - gyrotrons - harmonic oscillators - submillimetre wave oscillators - submillimetre wave tubes - Thomson effect
Uncontrolled terms:subterahertz pulse gyrotron - second-harmonic oscillation - CTS measurement - SH oscillation - LHD - FIR FU - collective Thomson scattering measurement - fusion plasma - high-density plasma - electron gun - power 62 kW - frequency 388 GHz - frequency 389 GHz - power 83 kW
Inspec classification codes:B2350 Microwave tubes - B2320 Electron emission, materials and cathodes
Numerical data indexing:power 6.2E+04 W;frequency 3.88E+11 Hz;frequency 3.89E+11 Hz;power 8.3E+04 W
Treatment:Practical (PRA)
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