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Title:Preliminary experiment of thermionic RF gun with low back-bombardment
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Abstract:A design scheme of amicrowave gun with two independent microwave power feed-in ports is proposed. Numerical simulation results show that the electron back-bombardment of the thermionic-cathode microwave gun can be greatly decreased, and high quality electron beams can be obtained by adjusting the phase displacement between the two microwave ports. Cold test results of the resonance frequency of the cavities and the field distribution of the RF gun are given. Prelimilary hot test results show that, the beam current intensity and spot size at the gun output port are over 500 mA and around 3 mm, respectively, and the normalized emittance is 13.5 π • mm • mrad, which is obtained with dual-screen measurement. The measured parameters agree well with the theoretical design.
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