Abstracts

Parametric Interactions in High-Tc Superconducting Step Edge Junctions at X Band

A.Z. Kain and H.R. Fetterman. "Parametric Interactions in High-Tc Superconducting Step Edge Junctions at X Band." 1993 MTT-S International Microwave Symposium Digest 93.3 (1993 Vol. III [MWSYM]): 1425-1428.

We have fabricated and tested both single junctions and series arrays of YBCO step edge junctions for four photon parametric effects at X band as a first step in developing a parametric amplifier at 60 GHz. The series array of 25 junctions at 10.3 GHz shows a 10 dB increase in reflected signal power as the pump power is increased, while the single junction at 12.2 GHz indicates a 2 dB change. ‘The reflected power at the characteristic idler frequency of 2omega/sub p/-omega/sub s/ is evidence of true Josephson junction parametric interaction. We are currently investigating the use of thallium based films at 60 GHz which offer a broader range of operating temperatures than does YBCO. Our design for a parametric amplifier at V band is a combination of microstrip based series arrays of junctions and an antipodal finline transition.

❑ Return to main document.