

Evaluation of High-Tc elements in submm-mixers

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Abstract

We are performing an extensive study to understand the mixing properties of high-temperature superconductor (HTS) bicrystal Josephson junctions at 345 GHz and high operating temperatures. Results of $T_{\text{sys}} < 1000\text{K}$ DSB have been achieved at an operating temperature of 17K with a cryocooler. The IF contribution is approx. 300K. L.O. power is coupled by a beam splitter and is around 50 nW.

These results are without any corrections and improvement is possible by applying matching structures. Details will be available at the time of the conference in May. We have mixing elements for 850 GHz in preparation as no degradation is expected in performance due to theory.