The Quasioptical Josephson Oscillator (QUO) is a 2-D array of between 100 and 1,000,000 Josephson Junctions, each at the center of a small dipole antenna. HYPRES, Inc. of Elmsford, NY has fabricated test chips which have demonstrated 0.35 microwatts radiation at 190 GHz in one case, and 0.7 microwatts radiation at 345 GHz in another case. A significant understanding of the 2-D oscillators was developed through theoretical and numerical calculations.
Research Objectives and Status

The primary goal of this program was to demonstrate that the Quasioptical Josephson Oscillator (QJO) design is capable of emitting high frequency radiation. This goal has been met with the measurement of 0.36 μW radiation at 190 GHz from an array of 638 junctions, and with a measurement of 0.7 mW at 345 GHz from an array of 2,784 junctions.

A secondary objective was to understand phase-locking behavior in these arrays. We have accomplished that through extensive numerical and analytical calculations, as well as microwave modeling of the 2-D array structures. The results are an array of different geometry than originally proposed, with the resulting radiation pouring from which proved our analyses correct.

Cumulative list of Refered Publications (acknowledging this grant, through 4/30/94)


Professional Personnel Working on this Grant


Conference Presentations (acknowledging this grant)


Interactions (Conferences and Review Panels)

Each of the following was presented by the first author listed:


