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Publication Date

1989-05-01

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Center for Advanced Materials

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To be presented at the 1989 International Superconductivity
Electronics Conference (ISEC '89), Tokyo, Japan,
June 12-13, 1989

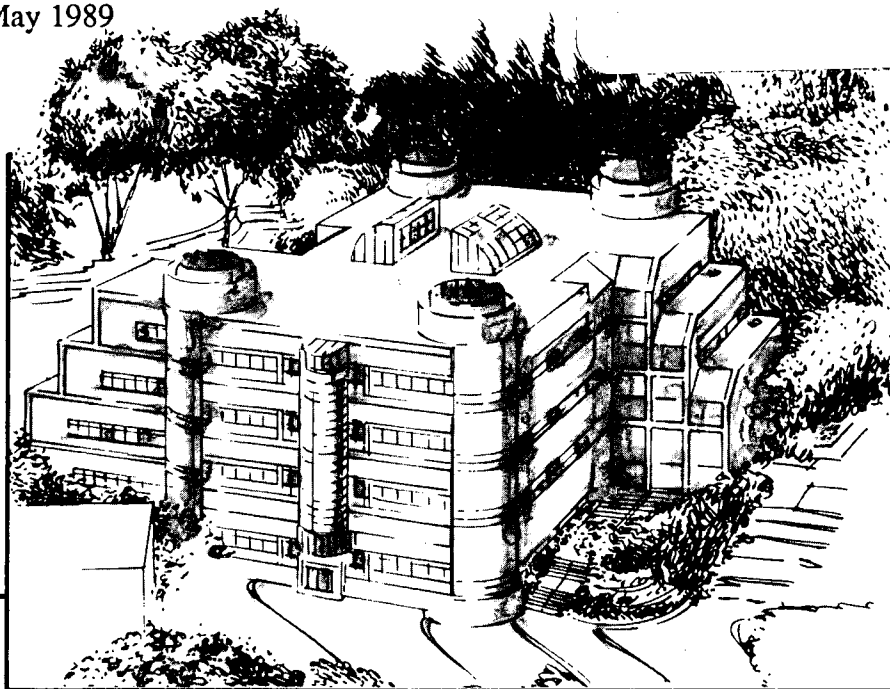
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May 1989

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PROGRESS IN SUPERCONDUCTING MIXERS AND DETECTORS FOR INFRARED
AND MILLIMETER WAVES

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ABSTRACT

A review is given of the superconducting components that have been developed for infrared and millimeter wave receivers. A brief description is given of the scientific principles on which each device is based, followed by a discussion of the performance that has been achieved in terms of the appropriate figures of merit. Finally, comments are made about the possibility that useful device performance can be achieved by using the new high T_c oxide superconductors. This review emphasizes photon-assisted quasiparticle tunneling and the SIS quasiparticle mixer, which is the only superconducting component to find substantial applications at infrared or millimeter wavelengths. Descriptions are given of the SIS quasiparticle direct detector, and the various superconducting bolometers for which practical applications appear possible. The less promising Josephson effect detector and mixer and also the various ideas for superconducting photon detectors are described because of the current interest in possible high T_c versions of these devices.

ACKNOWLEDGMENT

Work supported by the Director, Office of Energy Research, Office of Basic Energy Sciences, Materials Sciences Division of the U.S. Department of Energy under Contract No. DE-AC03-76SF00098.

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