

## ED6-2-INV

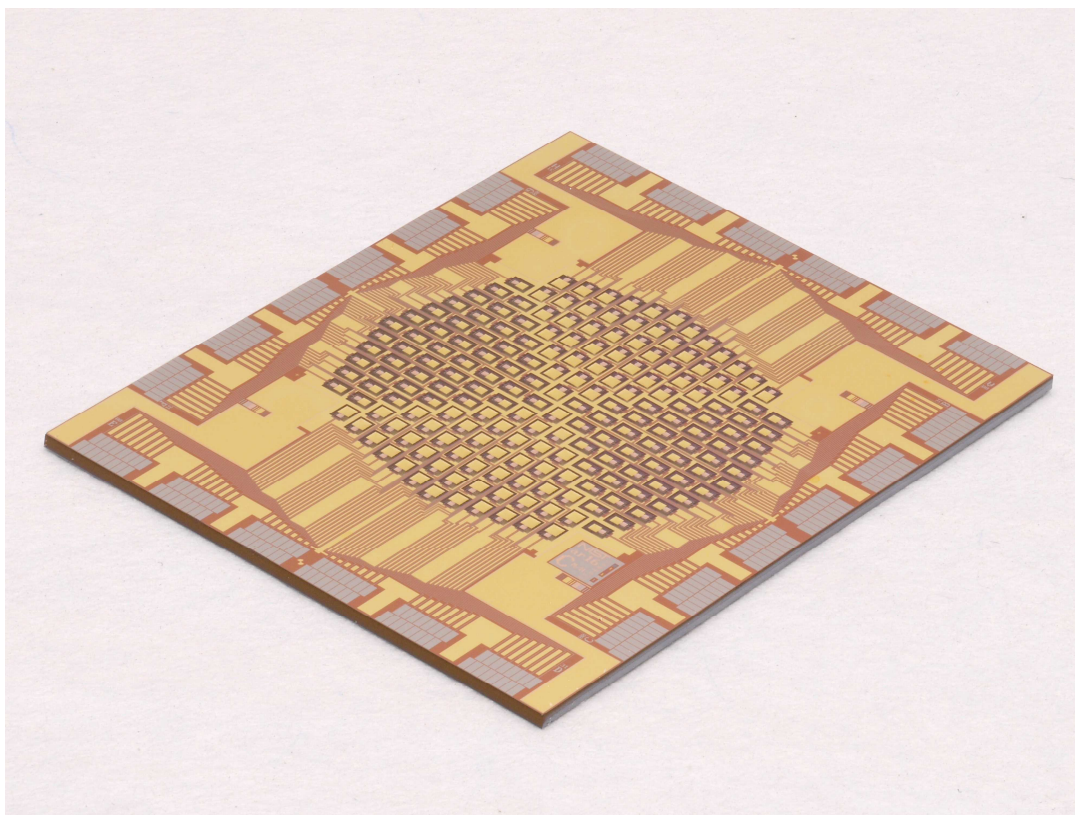
### Superconducting Detectors: the Past 30 Years and Future Prospects

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Superconducting detectors are increasingly used to measure photons across the electromagnetic spectrum, as well as for particle detection and searches for exotic particles. In this presentation, we discuss the physical principles that have motivated the study of superconducting detectors, in particular, the potential for sensitivities far surpassing those of more conventional detectors. Then, we review the past 30 years of development in the area of superconducting detectors. Over this period, the use of some technologies, such as transition-edge and kinetic inductance detectors, has steadily grown such that large format arrays (like the one pictured below) are now found in applications as diverse as x-ray materials analysis and millimeter-wave astrophysics. The growing capability of superconducting detectors has produced a virtuous circle wherein the successful entry of superconducting detectors into new application areas has spurred further investment and improvement in the technology. We also discuss the crucial enabling role played by several supporting technologies including convenient cryogenics and superconducting readout circuitry. We then describe the state-of-the-art in superconducting detector technology and some of its many applications. Finally, we discuss potential developments in the years to come.



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