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【525】 Experimental Realization of Microwave Quantum Illumination

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Quantum illumination is a quantum sensing technique in which quantum correlation is used to improve the detection of a low-reflectivity object that is immersed in a bright thermal background. Here, using a superconducting circuit platform we experimentally implement quantum illumination at microwave frequencies. We use a Josephson parametric converter to generate stationary entanglement between microwave radiation and use the correlated photons to probe the region to detect the existence or absence of a target. We show that the signal-to-noise ratio of the microwave quantum-illumination system is superior to that of any classical microwave radar of equal transmitted energy.

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