Abstracts

Superconductive hot-electron-bolometer mixer receiver for 800-GHz operation

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In this paper, we describe a superconductive hot-electron-bolometer mixer receiver designed to operate in the partially transmissive 350-/spl mu/m atmospheric window. The receiver employs an NbN thin-film microbridge as the mixer element, in which the main cooling mechanism of the hot electrons is through electron-phonon interaction. At a local-oscillator frequency of 808 GHz, the measured double-sideband receiver noise temperature is T/sub RX/=970 K, across a 1-GHz intermediate-frequency bandwidth centered at 1.8 GHz. We have measured the linearity of the receiver and the amount of local-oscillator power incident on the mixer for optimal operation, which is P/sub LO//spl ap/1 /spl mu/W. This receiver was used in making observations as a facility instrument at the Heinrich Hertz Telescope, Mt. Graham, AZ, during the 1998-1999 winter observing season.

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