Abstracts

The Low-Noise 115-GHz Receiver on the Columbia-GISS 4-ft Radio Telescope

H.-I. Cong, A.R. Kerr and R.J. Mattauch. "The Low-Noise 115-GHz Receiver on the Columbia-GISS 4-ft Radio Telescope." 1979 Transactions on Microwave Theory and Techniques 27.3 (Mar. 1979 [T-MTT]): 245-248.

The superheterodyne millimeter-wave radiometer on the Columbia-GISS 4-ft telescope is described. This receiver uses a room-temperature Schottky diode mixer, with a resonant-ring filter as LO diplexer. The diplexer has low signal loss, efficient LO power coupling, and suppresses most of the LO noise at both sidebands. The receiver IF section has a parametric amplifier as its first stage with sufficient gain to overcome the second-stage amplifier noise. A broad-banded quarter-wave impedance transformer minimizes the mismatch between mixer and paramp. At 115 GHz, the SSB receiver noise temperature is 860 K, which is believed to be the lowest figure so far reported for a room-temperature receiver at this frequency.

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