Abstracts

System Implications of Large Radiometric Array Antennas

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Current radiometric earth and atmospheric sensing systems in the centimeter wavelength range generally employ a directive antenna connected through a single terminal pair to a Dicke receiver. It is shown that this approach does not lend itself to systems with greatly increased spatial resolution. Signal-to-noise considerations relating to antenna efficiency force the introduction of active elements at the subarray level; thus if Dicke switching is to be used, it must be distributed throughout the system. Some possible approaches are suggested. The introduction of active elements at the subarray level is found to ease the design constraints on time delay elements, necessary for bandwidth, and on multiplebeam generation, required in order to achieve sufficient integration time with high resolution.

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