

## 9.4A THE BOOT LAKE MF IMAGING RADAR

G. W. Adams\* and J. W. Brosnahan\*\*

\*Utah State University, Logan, Utah

\*\*Tycho Technology, Inc., Boulder, CO

The Middle-Atmosphere Imaging Radar is located at the Boot Lake field site, 10 miles east of Brighton, Colorado. We operate at 2.66 MHz with a 50-kW peak pulse power in 30 microsecond pulses. Ten independent coaxial-collinear antennas (BALSLEY and ECKLUND, 1972) are used; five are parallel and run east-west, the other five are parallel and run north-south. Each antenna consists of eight half-wave dipoles. All ten antennas or a crossed pair may be used for transmission; all ten are sampled by pairs in rapid sequence for reception.

The system is now operating on a campaign basis as a Fourier interferometer by measuring the complex voltages on the ten antennas and Fourier transforming them independently. Multiple scatterers within a single range gate, now sorted by velocity, can be located individually by their phase angles. The transmitted signal cycles through four modes (N-S linear, right-hand circular, E-W linear, and left-hand circular).

The site is currently supported by the Los Alamos National Laboratory. Current investigations include studies of mesospheric and stratospheric scattering processes for the National Science Foundation, and of infrared structures and radar scattering at the mesopause for the Air Force Geophysical Laboratories.

The results presented at this conference (paper 2.5A, this volume) are the first from this experiment. Now that the software is developed, we will process several accumulated tapes of data. In addition, a measurement campaign is underway in cooperation with J. W. Meriwether and A. W. Peterson (University of New Mexico, infrared photometry and imaging). Much of our effort will focus on the analysis of these data. Our main interests in this work are the wave-like structure seen in OH(V > 1) emission, which have dimensions comparable to those observed in the radar images.

## REFERENCE

Balsley, B. B. and W. L. Ecklund (1972), A portable coaxial collinear antenna, IEEE Trans. Antenna Propagat., AP-20, 513-516.