Meteor Orbital Parameters using CMOR

A. R Webster, P. G. Brown, and J. Jones,
The University of Western Ontario'
London, Ontario.
Canada

The Canadian Meteor Orbit Radar (CMOR) is a relatively new system designed to determine the orbital parameters of meteors detected by the back-scatter radar. The transmitter is of reasonably high power (6kWpeak) and the pulse-repetition frequency variable up to a maximum of 2000pps. This feeds a single 3-element Yagi antenna.

The heart of the receiving system is a 5-element array of 2 orthogonal 3-element arrays with common center element each consisting of a 2-element Yagi antenna. This part of the system has been operatonal for a few years and has been used in the recent observations of the Leonid meteor shower from 1998 to 2002. This core system is capable of determining the azimuth and elevation of a given meteor with considerable accuracy (better than 0.5^0 for s:n > 10dB).

A recent development adds two out-rider stations each with a single receiving antenna and at a distance ~ 8km. These two stations are located from an approximate right angle with the main base station allowing the determination of velocity and direction in space of the meteor. Approximately 30% of the meteors observed on the main station are also observed on these two added receivers.

Results are presented from the operation of the system on a routine basis over a period of several months. This includes observations of sporadic and several shower meteors.