

NEW METEOR HEAD ECHO OBSERVATIONS FOR IONIZATION PROFILING AND PRECISE ORBIT DETERMINATION WITH THE MU RADAR

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Meteor head echo observation by a HPLA (High Power Large Aperture) radar is useful in determining velocities and orbits of the meteors. The detailed measurement of radar echo power also provides information on fragmentation and ablation process, which shows interaction of meteoroids and atmosphere. The MU radar (middle and upper atmosphere radar) head echo observation with 46.5 MHz, 1MW output has a characteristics of a wider beam width (3.7 deg in HMFV) than other HPLA radars such as Arecibo, Jicamarca, etc. and hence meteors with various radiant direction can be measured with a long enough duration time. The spatial interferometry system allows us to obtain precise 3-D location of each meteor head for each IPP (Inter Pulse Period). The MU radar receiving system has been upgraded with 25 ch receiving channels and a larger (faster) data sampling capability, and therefore precision of meteor head echo observation has improved significantly. In this paper, we present current status of improved meteor head echo observations for detailed profiling of ionization along the orbit, and also for a more precise orbit determination and decelerations.

Meteor head echo, HPLA radar, ablation and fragmentation

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