

## Head echo observation with the MU radar 25 channel interferometer: (1) Observational results for the Geminids shower

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Head echoes are due to the radar wave reflection by plasmas created around meteor heads. With a head echo observation, we can get direct information of the 3D velocity vector of the meteor every moment. However, unlike normal meteor trail echoes, the signals of head echoes are usually very weak, and we need a highly sensitive receiving system such as the MU radar in Shigaraki operated by RISH, Kyoto University. Prior to 2004, the MU radar interferometer consisted of 4 elements, which were used for the head echo observations (e.g., Nishimura et al., 2001). After 2004, the number of elements was significantly increased from 4 to 25, so that we can expect to obtain much higher accuracy in determining the meteor orbit parameters from head echo observations.

In this talk, we will present the first application of this 25-channel interferometer to the meteor head echo observations during the Geminids shower in 2008, and show how the higher accuracy has been realized.