



METRO: reconstruction of the trajectories of meteoroids using the BRAMS interferometer

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METRO is the acronym for MEteor TRajectories and Origins. It is an interdisciplinary project with a collaboration between several scientific institutes and also with radio amateurs.

The METRO project focuses on radio meteor observations and what we can learn from them. For that purpose, the dataset from the BRAMS network are used. BRAMS (Belgian RADio Meteor Stations) relies on forward scattering of radio waves emitted by a beacon in the ionization trails of meteor ionization trails and received at 30 stations across Belgium.

One of the main goals of METRO is to determine the trajectories of meteors in the sky. For some meteors, it is possible to retrieve meteor speed. Adding these two pieces of information, we can trace back the orbit of the meteoroids.

We present here the results of a method developed by Jones et al (1998) applied on the interferometric system based in Humain (Belgium). It consists in a 5 antenna configuration (two orthogonal sets of three aligned antennas with one central antenna common to the two sets). It allows the retrieval of the direction of arrival of the signal without ambiguity and with an accuracy of the order of 1° . The results obtained are then validated using a drone. Finally, we present the way to obtain the full trajectory using this information and three additional BRAMS stations.

Jones, J., Webster, A.R., Hocking, W.K., An improved interferometer design for use with meteor radars, *Radio Science*, Vol 33, 1998.