Estimating errors of meteor trajectories from double-station observation data

František Ďuriš, Leonard Kornoš, Pavol Matlovič, Juraj Tóth

Meteors are usually very brief luminous events that occur mostly randomly on the sky and are difficult to simulate. While the measurements and computation of their trajectories are now well managed, the estimation of the errors of such measurements and computations are difficult and still lacking universally accepted methods.

The primary problem is that it is hard to compare the calculated results like radiant position or atmospheric velocity with the real data. While various groups of observers can compare their results and thus deduce some estimate of the errors, there are significant differences in both optical systems used as well as computation approaches. Additionally, not all observers opened their methods to the public, which further complicates such comparisons.

We present a method developed for the AMOS data (Tóth et al., 2011, Zigo et al., 2013) and implemented in our processing pipeline (Kornoš et al., 2015, Kornoš et al. 2018). The method is based on Monte Carlo simulations, and it takes into account random as well as some possible systematic errors.

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