

Spectral survey of mm-m sized meteoroids

Pavol Matlovič, Juraj Tóth, Regina Rudawska, Leonard Kornoš, Adriana Pisarčíková

We will present a survey of spectral and orbital properties of mm-m sized meteoroids. Emission spectra of meteors are routinely observed within the All-sky Meteor Orbit System (AMOS) network at 5 locations around the world. Our analysis is based on 202 spectra of -2 to -14 mag meteors captured at the AGO Modra Observatory in Slovakia during the 2013 – 2017 observations. Orbital and structural properties were determined for 146 multi-station cases. The collected dataset enables us to study compositional variations of meteoroids from various dynamical sources including several meteoroid streams, providing implications for their parent objects.

The detected differences compared to the population of mm-sized meteoroids are described. The preservation of volatiles in larger meteoroids is directly observed. We will discuss the processes causing detected sodium depletion and enrichment and the implications for the meteoroid structure. Meteor population originating in Apollo type asteroids was identified. Finally, observed heterogeneities among several major meteoroid streams will be presented.