PHYSICAL PROPERTIES OF THE METEOROIDS BY RESULTS SIMULTANEOUS RADAR AND OPTICAL OBSERVATIONS

M. Narziev

Institute of Astrophysics Academy of Sciences of the Republic of Tajikistan.

This paper proposes the calculation results of photographic and radar meteoroid mass of simultaneous radio - TV and radio-photographic observations meteors in 1977-1980 in Hissar Astronomical Observatory of the Institute of Astrophysics, Academy of Sciences of Tajikistan. The result of analysis of the shape of light curves of meteors within the theory of evaporation and the theory of the quasicontinuous fragmentation are presented.

The photographic meteoroid mass from the light curve were defined: a) by the value of maximum luminescence intensity at a height h_m and b) by the integration light curve. Based on analysis of the data of the photographic mass were obtained correction factor that takes into account the effect of fragmentation and other factors to determine the mass of meteoroids first method. Average value of the mass of meteoroids calculated from the light curve for meteors with magnitude $M \le 1$ is 19.10^{-3} g, and the average value of the mass found on magnitude of the luminescence intensity at the height the maximum brightness consist $18.2.10^{-3}$

that is in satisfactory agreement between. Masses of the meteoroids was calculated also radio method by value of maximum linear electron density at the height of maximum ionization.

In the framework of the classical theory and quasi-continuous fragmentation the theory analyzed the shape of the light curves of simultaneous radio - optical meteors. It is shown the main mechanism of ablation that approximately 60 % of simultaneous radio optical meteors is а quasi-continuous fragmentation. The bulk density and porosity of sporadic meteoroids were showers and determined. Found that the Geminids meteoroids and δ -Aquariids have the largest bulk densities $(\delta_0 = 3.6 \text{ g/cm}^3)$, and have not porosity (K = 0). A meteoroids of the showers Orionids and Leonids have the lowest bulk density ($\delta_0 < 0.6$ g/cm3), and the highest value of the porosity (60 \leq K \leq 80%). The mass fragments of shower and sporadic meteoroids lie in the range of 5.10^{-8} ÷ 10^{-5} g.