ALGORITHM FOR SOFTWARE PROCESSING OF OPTICAL ABLATION SPECTRA OF METEOROIDS

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One of the urgent tasks of science is the study of extraterrestrial matter, but this process involves a few difficulties, mainly related to changes in the structure of matter under the influence of temperature, pressure and shock loads when it falls on the surface of the Earth. Another approach to obtaining substances for study is conducting space missions to return samples from asteroids. However, conducting such missions requires a lot of financial and time costs, as well as a large number of professional personnel and equipment.

An alternative to these approaches is to study the process of meteoroid ablation during the passage of the Earth's atmosphere as a link between the already altered matter of the fallen meteorite and the original extraterrestrial matter. One of the methods of studying ablation is spectral analysis in the optical range. This method does not require such costs as missions to return samples from asteroids and allows us to study the processes occurring with matter during the earthquake, which makes it possible to establish a link between the composition and structure of fallen meteorites and extraterrestrial matter.

The method of spectral analysis of meteoroid ablation has become widespread, but due to the relative rarity of observations of fireballs and even more rare cases of fixation of the spectra of these fireballs, experiments to recreate the conditions of meteoroid passage in ground installations with a heated gas stream have also become widespread. Such installations in a certain range make it possible to reproduce the conditions of the gas flow acting on the meteoroid during the fall, which makes it possible to study the ablation process in the laboratory.

Thanks to these two methods, a large volume of optical ablation spectra accumulates, which must be analyzed.

This paper discusses the development of a software algorithm for processing optical ablation spectra in order to obtain analytical information about the composition of the sample, the process of its ablation, as well as the possibility of classifying samples by characteristic spectral features.

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