

Nanosecond pyrometry of fast processes in gas-dynamic experiments

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We propose a method of noncontact analysis of the shock loading dynamics in gas-dynamic experiments. The method is based on recording the temporal changes in the spectral composition of thermal emission accompanying fast processes.

To characterize the temperature and temporal parameters of the object under study, a multichannel fiber spectrograph has been developed that collects thermal emission in the spectral range from 700 to 1700 nm. The analysis of spectrochronograms (dependence of the amplitudes of spectral lines on time) recorded by the spectrograph allows to register the temperature dynamics of the object of study in the range from 2000 to 4000 K with nanosecond time resolution.