

Experimental determination of a thermal model of the LUNAR-A penetrator

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In situ heat-flow measurements will be carried out in Lunar-A mission. Detailed analysis of the temperature field within and around the penetrator, using its thermal model, is required. We have measured thermal properties of the penetrator's components at the temperature of -20 centigrade within 10 percent errors, and constructed the initial thermal model of the penetrator. To confirm the validity of this model, we have made a thermal test for a whole penetrator, by detecting the thermal response of the penetrator to the change of the atmospheric temperature. The result did not conflict with the analytical prediction based on the initial thermal model, which was slightly revised into the final thermal model for the better description of the experimental data by using the inverse method.