Measurements of thermal properties of the penetrator's mechanical components:parametric study to lunar heat-flow measurements

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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 it's thermophysical modeling, is required. we developed a system to measure thermal properties of the penetorator's mechanical components, at the temperature of minus 20 centigrade. The thermal conductivity and the specific heat were measured using steady state method and adiabatic method respectively, within 10% errors. From these basic data we constructed the thermophysical modeling of the penetrator, performed the parametric study. We got the results that the error of thermophysical modeling of the penetrator could yield about 10% error of lunar heat-flow measurements in steady state.