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SIMULATION AND EXPERIMENTAL STUDY OF OPTICAL PROPERTIES OF SPATIAL TARGETS

Abstract

Optical characteristics of spatial targets are studied by establishing optical signatures in visible and infrared band mathematics model, a ground-based optical measurement method is designed. Taken as input in calculation of infrared emission, temperature fields on target surface are solved according to the radiation flux of outer sources. Reflection from target is based on judgments of shadow and Bi-directional Reflectance Distribution Function (BRDF) of target surface materials. Then the signatures of typical target are calculated and analyzed. The infrared radiation intensity of the model is measured on the ground condition. Based on the basic theory of radiation transmission, the relationships between simulation and measurement results at different angles are analyzed, and the relationship between signal intensity and optical parameters of the target surface was also considered.