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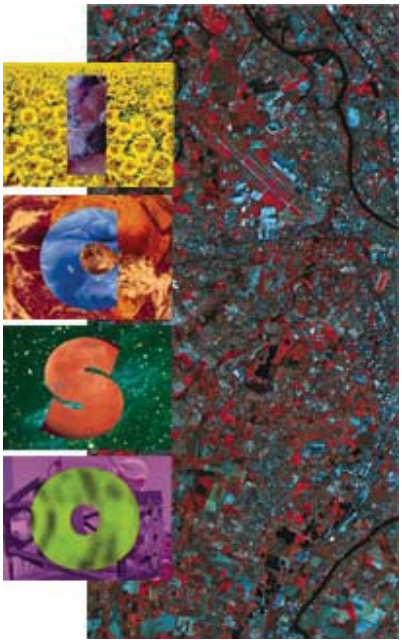

Compact large focal length optical systems for high resolution space imaging

Saji Abraham, Amiya Biswas, Phanindra Narayan

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ABSTRACT

Compact large focal length optical systems for high resolution space imaging

Authors: Saji Abraham, Amiya Biswas and GLN Phanindra Narayan
Affiliation: ODFD/OMG/SED/SPACE APPLICATIONS CENTER/ISRO

ISRO is planning to orbit a four meter focal length telescope for generating high resolution images of the Earth from a polar sun synchronous orbit.
This telescope has to be very compact to fit in the PSLV launcher envelope. The most compact optical system capable of meeting the requirements is a two mirror telescope. The inherent limitation of the field of view of two mirror systems is overcome by the inclusion of three spherical lenses close to the focal plane. These lenses correct the astigmatism and give good image quality at +0.85 degree field of view. Since the lenses are of low power, they do not inhibit the broad spectral range associated with reflecting systems. The testing of the lenses independently of the telescope insures independent verification of the lens quality.
Test lenses have been designed for this purpose. Stray light suppression is done by using baffles appropriately designed and placed at strategic locations in the telescope. A scene simulator, consisting of a two mirror system, is used to provide the collimated beam for testing the image quality of the payload.
This paper presents the optical design of the optical system proposed for this mission, the test lenses used for verification of the
relay lenses, the scene simulator and the stray light analysis carried out with the baffles.