# Modeling of Solar Diffuser Stability Monitor Sun View Screen Transmittance

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## Abstract

Earlier work by Sun et al. [2005] modeled the Sun view screen transmittance of the solar diffuser stability monitor (SDSM) on Moderate Resolution Imaging Spectroradiometer (MODIS) which explains the oscillatory pattern in the Terra/Aqua MODIS SDSM Sun view response collected during the post-launch yaw maneuver test. The SDSM screen consists of small size pinholes which limit the screen transmittance. The SDSM Sun view transmittance pattern is affected by the shape and distribution of pinholes, screen thickness, relative distance and orientation of the aperture stop to the screen. Planning of post-launch yaw maneuver test often requires comprehensive angular coverage to resolve the angular variation of the screen transmittance. This paper developed a Gauss-Kronrod quadrature method-based model to simulate the SDSM Sun view transmittance. This method performs iterative integration of the interception area between pin hole and aperture stop which is critical in the screen transmittance calculation. Parametric dependences of the MODIS SDSM Sun view transmittance on various geometric factors such as the pinhole size or spacing and misalignment between the SDSM Sun view screen and aperture stop are studied. The implication for the post-launch yaw maneuver planning to resolve the angular variation of the SDSM screen transmittance due to the Sun view screen misalignment is discussed.