



Analytical and Experimental Characterization of a Linear-Array Thermopile Scanning Radiometer for Geo-Synchronous Earth Radiation Budget Applications (Paperback)

By Ira J Sorensen

Biblioscholar, United States, 2013. Paperback. Condition: New. Language: English . This book usually ship within 10-15 business days and we will endeavor to dispatch orders quicker than this where possible. Brand New Book. The Thermal Radiation Group, a laboratory in the department of Mechanical Engineering at Virginia Polytechnic Institute and State University, is currently working towards the development of a new technology for cavity-based radiometers. The radiometer consists of a 256-element linear-array thermopile detector mounted on the wall of a mirrored wedgeshaped cavity. The objective of this research is to provide analytical and experimental characterization of the proposed radiometer. A dynamic end-to-end opto-electrothermal model is developed to simulate the performance of the radiometer. Experimental results for prototype thermopile detectors are included. Also presented is the concept of the discrete Green s function to characterize the optical scattering of radiant energy in the cavity, along with a data-processing algorithm to correct for the scattering. Finally, a parametric study of the sensitivity of the discrete Green s function to uncertainties in the surface properties of the cavity is presented.



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