335. Radiosity Equation Model for an Interior Space Illumination Design; Mars Project

Hien Ngo Roger Williams University
Advisor(s): Yajni Warnapala, Roger Williams University

This research project is focused on finding the true solution of the exterior Dirichlet problem for the Radiosity equation to determine the convergence of a Spherical Quatrefoil in three dimensions at its boundaries, using the Galerkin Method. A mathematical model, based on the Radiosity equation will be utilized to investigate the role of incoming light waves for different surfaces with different emissivity and reflectivity functions. Theoretical and computational details of the method will provide sufficient information for designing proper lighting of an interior space inside a spacecraft that can ultimately be used for future endeavors of Mars exploration. H. Voderberg constructed a tile with the property that two copies of the tile can enclose one or two other copies. This tile's design can be extended to a general form which has the property that any number of copies can be enclosed within just two tiles. This property is known as the n-enclosing property, where n is the number of tiles enclosed.