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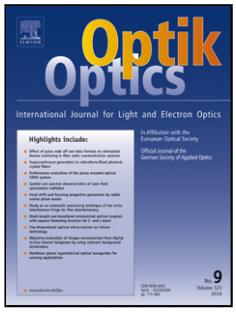

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Two Dimensional Green's Function for Planar Grounded Dielectric Layer in Non-integer Dimensional Space

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Abstract:

Two dimensional Green's function for grounded dielectric half space geometry in non-integer dimensional space has been derived. It has been assumed that both half spaces are of non-integer dimension. Radiated fields are written in terms of unknown plane wave spectrum. Unknown spectrum functions are determined using the boundary conditions. Special cases have also been addressed considering one or both the spaces are of integer dimensional space. The solution for both the spaces are of integer dimension is used to make a comparison with previously reported results. Results are reported for different values of physical and geometrical parameters.

1. Introduction:

In general, engineered systems comprise of sensors/acctuators, communication networks, and processors. They are used to monitor and control physical (electrical, mechanical, thermodynamic, etc.) processes. Parts of these systems are modeled as discrete events as well as with continuous events. A continuous distribution of data over the whole space is known as continuum model. A fractal is a natural phenomenon or a mathematical set that exhibits a repeating pattern at every scale. In general the

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