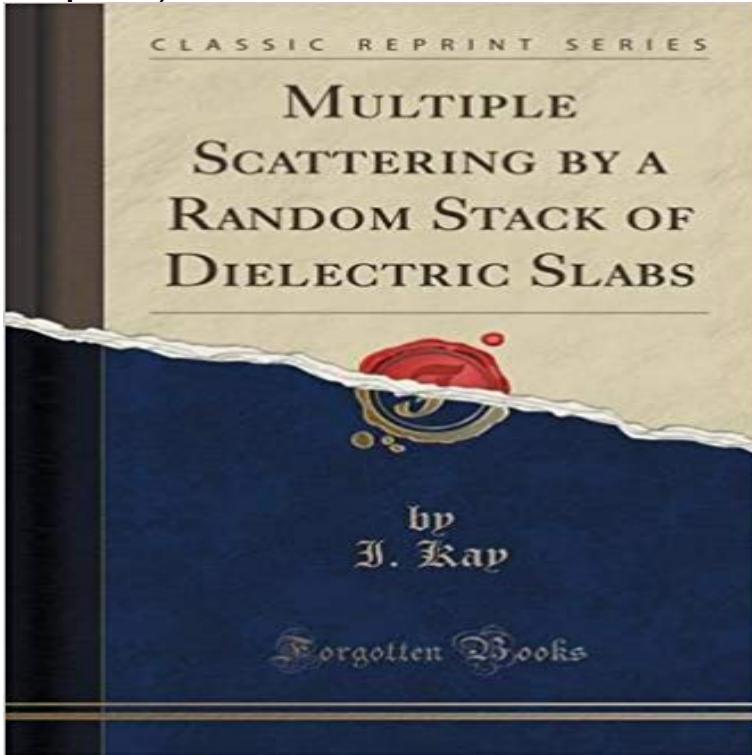


Multiple Scattering by a Random Stack of Dielectric Slabs (Classic Reprint)



Excerpt from Multiple Scattering by a Random Stack of Dielectric Slabs In treating problems involving the scattering of incident radiation (e.g., sound waves, radio waves) by a random medium, it has long been recognized that the random nature of the scattering medium plays an important part in attenuating multiple scattering. A familiar qualitative explanation of this phenomenon is that the internal field produced in the medium by single scattering is considerably weakened by the incoherence, or, to put it differently, that the contributions to the internal field from uncorrelated parts of the medium add like power rather than like amplitude. However, with the exception of the work of Mintzer, there appears to be little in the way of explicit calculations of the strength of multiple scattering in a random medium. The difficulty seems to stem mainly from the three-dimensional nature of the usual scattering problems, which requires one to carry out difficult multiple integrations in order to estimate the high order scattering. In the present paper, we treat the multiple scattering of incident plane waves by a random stack of dielectric slabs. Because of the one-dimensional nature of the problem, and because of the simple way in which the random stack is generated, we are able to carry the analysis of the effects of multiple scattering quite far. In particular, we find that we can get an upper bound for the strength of scattering of any order which, unlike the crude estimates usually given, takes into account the random nature of the scattering medium. About the Publisher Forgotten Books publishes hundreds of thousands of rare and classic books. Find more at www.forgottenbooks.com This book is a reproduction of an important historical work. Forgotten Books uses state-of-the-art technology to digitally reconstruct the work, preserving the original format whilst repairing imperfections present in the aged

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