

Diffracted Acoustic Field around a Wedge

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Abstract

Patterns of the diffracted field around a wedge are given, and their physical meanings discussed in depth, based upon some existing solutions to edge-diffraction problems. The different effects of ideally-rigid and ideally-soft materials on the wave distribution are studied in particular. It is found that a rigid baffle tends to “draw” most of the diffracted energy into the half space containing the baffle itself. On the contrary, a soft baffle tends to “push” most of the diffracted energy to the other side. The conclusions drawn here are useful such as in explaining some experimental phenomena, designing acoustic baffles, and studying echo-formation problems.