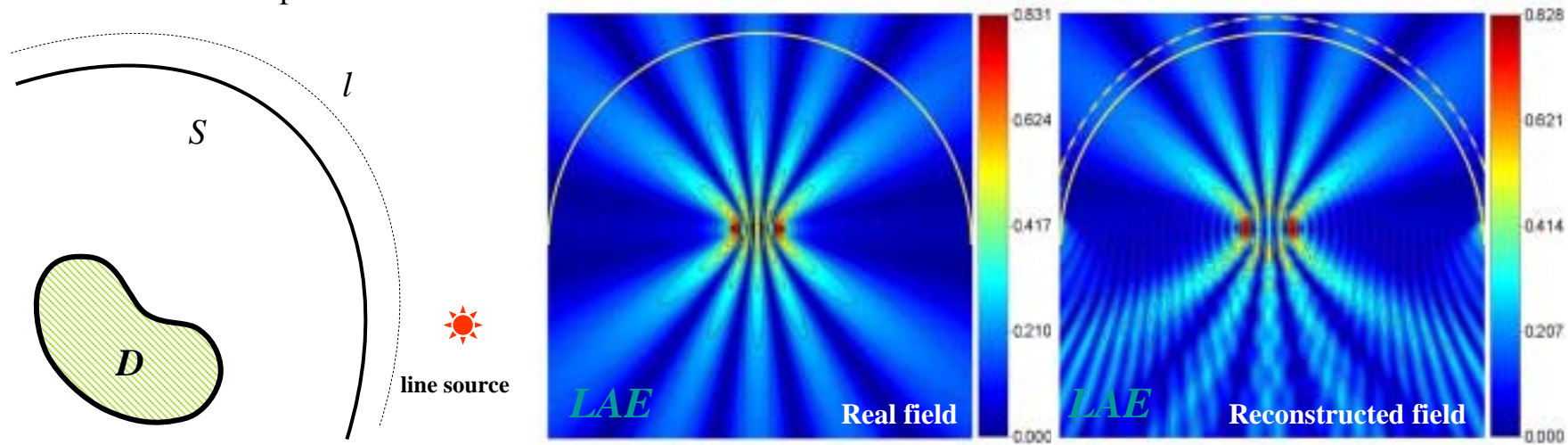


Application of MAS in Field Reconstruction

There are many methods of reconstruction of the analytical continuation of scattered wave field (SF). In the holographic method the wave field reconstruction by known data of SF field amplitudes and phases on some surface in neighboring area is implemented. The suggested method is based on analytical continuation of the wave field computed also by MAS. A new idea to use the functions describing the field propagating toward the source is introduced here. Such function is in 2-D for the same time dependence of .



Assume a body D , illuminated by a line source. Then, assume that on a certain surface S at some distance from the object, the complex SF is known (amplitude and phase). The aim is to reconstruct the analytical continuation of the SF around the object until one reaches the singularity points (sources of SF's or re-emitters). To this end as shown in figure, on the surface l , near the surface where the scattered field is known, AS of the same frequency and arbitrary coefficients are placed. The nature of these AS is a matter of high importance. Since the AS will be used to describe a field propagating toward them, the propagation vector of the SF should also be oriented towards the sources. Thus, these AS should not obey to radiation condition and contrary should behave as absorbers, generating any arbitrary field that propagates toward them. Therefore the AS are named as Auxiliary Absorbers (AA) under the assumption of time dependence of . Because of the uniqueness of analytical continuation of the scattered wave field, the AA will restore the field up to the main singularity points within the non-accessible area of the object.