

1032-94-101

Robert Michal Owczarek* (rmo@lanl.gov), MS 443, Los Alamos, NM 87545, and **Ousseini Lankoande**. *Strategies in Compton scattering artifact removal from X-ray radiographs*.

X-ray radiography is a tool for studying internal structure of complex objects. In the case of objects with axial or spherical symmetry, it is possible to reconstruct the internal structure using just one X-ray image (in contrast to more complex objects, for which tomography techniques, have to be used for reconstruction.) However, there are various artifacts in the images that have to be removed for a good reconstruction, by which we understand finding the thicknesses of the layers and the densities of the materials in the layers. The most important artifact is Compton scattering. The physics of this effect is too complicated to create a realistic method of removing the artifact using just the physical model. Therefore, one has to invent a method of removing the artifact by using only the information from the image. In the talk different strategies of Compton scattering removal will be discussed in the context of the reconstruction of the concentric spheres' objects. The symmetry of the problem allows for certain extrapolation techniques giving reconstruction of the full Compton signature separately from the rest of the information from the image. The techniques we invented will be presented. Their quality depends on the accuracy of edge searching techniques used. (Received August 16, 2007)