Abstract

This research evaluates different methods to create voxels, 3-dimensional pixels, in air without the need for special glasses or reflections off of surfaces. Research on the advantages of superimposing or the culmination, focusing, of laser light will be conducted. The point of superpositioning/culmination will be evaluated by the brightness of the voxel due to the Rayleigh Scatter Effect. The voxel's brightness is dependent on the laser output strength and inversely proportional to its wavelength. Once a superimposed/culminated voxel has been created in the lab the next step will be to manipulate the location of the voxel through 3-dimensional space. This research will discuss different techniques to move the voxel including the use of high-speed scanning galvanometer mirror positioning system or rotating wedge prisms to control beam steering. Once the voxel is able to be efficiently manipulated the next step will be to create a latent image, hologram, in 3-dimensional space.

Keywords: voxel, superposition, collimation, Rayleigh Scattering Effect, latent image