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(54) SYSTEM AND METHOD FOR FIBER OPTICS BASED DIRECT VIEW GIANT SCREEN FLAT PANEL DISPLAY

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(57) **ABSTRACT**

An apparatus and method for displaying large format images, graphics, and videos. The apparatus comprise a layer of column oriented optical fibers, each fiber is illuminated at one end by at least one laser diode, and a second layer which sits in front of the first layer and is parallel to the first layer, whose projected area substantially overlap that of the first layer. The second layer comprises a plurality of optical fibers arranged in rows. In between the first and second layer sits a third layer of optical switching elements. Alternatively, the second layer can be a light diffusing layer. Laser lights emitted from the laser diodes travel in parallel along respective column fiber until they are redirected by optical switching elements which couple the laser lights within the column fibers to the row fibers or to the difflusing layer directly whereby they are scattered by the diffusing elements to reach the viewing audience. The small size of the fibers results in very small fill factor, allowing light absorbing matrix and backing layer to absorb ambient light effectively. The contrast ratio under ambient light condition is further enhanced by the use of multilayer dielectric optical filter to preferentially absorb ambient light.