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Color Appearance Phenomena under High Ambient Illumination

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Abstract The color perception of human eyes is changed with the various displays and the ambient illumination. Now, mobile phones, iPads and other devices are applied inevitably in outdoors, but the researches of the color appearance phenomena under high ambient illumination are very limited. Therefore, it becomes an urgent problem to be solved. To keep the fidelity of color replication, the color reproduction characteristic of the LCD display under high ambient illumination (2500Lx~10000Lx) is studied in this paper, and the corresponding colors datasets are obtained. Then the color appearance phenomena under high ambient illumination are analyzed from the universality of the illumination, lightness and chroma. The perception regularities of human eyes of lightness, chroma and hue are obtained, and a theoretical basis on the accurate color reproduction for display is provided under high ambient illumination.

Keywords high ambient illumination; color appearance phenomenon; color reproduction; LCD display

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