زانکۆی سەلاحەدین - هەولێر
Salahaddin University-Erbil

Correlation Between Light Intensity and Distance: Inverse Square Law

Research Project

Submitted to the Department of Physics in partial fulfilment of the requirements for the degree of BSc. in Physics

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Supervisor Certificate

This research project has been written under my supervision and has been submitted for the award of the degree of BSc. in (Physics).
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Summary

The impact of angle and distance of smart screen blue light intensity on eye sightedness hazard refers to a study that examines how the angle at which a person views a smart screen device (such as a computer, tablet, or smartphone) and the distance between the eyes and the screen affect the intensity of blue light exposure. Blue light emitted from screens has been linked to potential hazards for eye health, including digital eye strain, dry eyes, and disrupted sleep patterns. This research investigates how the combination of viewing angle and distance from the screen can influence the amount of blue light reaching the eyes and its potential impact on eye health and sightedness. To determine the luminous flux emitted reflected by a diffusely reflecting surface as a function of the angle of reflection and to verify Lambert's law (cos-law) for different regular and diffuse surfaces using the graph of the measurement values. For the Tungsten light source, the relationship between distance and light intensity demonstrates an inverse square law pattern, where light intensity decreases exponentially as distance from the source increases. Initially, the intensity is notably high at a distance of 15 cm, but decreases sharply with increasing distance. It is observed that at a zero-degree angle, light intensity decreases with distance, following the inverse square law pattern. Conversely, at a 45-degree angle, light intensity also decreases with distance but exhibits a more evenly distributed pattern across measured distances compared to the zero-degree angle. Comparing the two angles, it is evident that light intensity is generally higher at the zero-degree angle, as more light is directed straight ahead. This highlights the significant impact of angle of incidence on the distribution and intensity of mobile light. Our research examines the impact of blue light from smart screens on eye health, finding that viewing angle and distance significantly affect eye strain. Proper screen placement and maintaining a suitable distance can reduce discomfort and long-term vision issues. Ongoing collaboration between researchers and technology developers is essential to develop evidence-based strategies for safe screen use practices.

LIST OF CONTENTS

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