Hodge experiment (continued) of interference with a slit in a transparent mask rejects wave models of light

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Abstract

Young's interference and Hodge's diffraction of light experiments show characteristics of light that have defied modeling except for the Scalar Theory of Everything (STOE) model. The Hodge Experiment is the Fraunhofer pattern from a first mask with a slit impinges on a second mask with a slit(s). The Hodge Experiment is extended to model a diffraction pattern on a transparent second mask with a slit. The screen pattern is an interference pattern such as produced with two slits in Young's Experiment. A nail is placed between the first and second mask to block the light of the center maxima. The interference fringes remained in the secondary peaks. This observation rejects wave models of light that requires light through the second slit. The STOE model successfully modeled the observed pattern.

keywords: STOE, diffraction, interference

1 INTRODUCTION

The Scalar Theory Of Everything (STOE) was developed to model cosmological problems (Hodge 2015d). Hodge (2004) posited the universe was composed of two components and their interaction.

A particle model of diffraction and interference must first describe "coherence" of light. Passing the light through a slit in a mask tests coherence. If the light is coherent, a diffraction pattern appears on a screen. If the light is not coherent, a diffraction pattern will not appear on a screen.

Hodge (2012) expanded on the characteristics of the plenum, hods, and their interactions to derive the STOE particle[1] photon diffraction model. This photon model and a toy simulation program were developed to yield a diffraction pattern after random particle photons moved a large distance that simulated

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[1]A distinction is made between a wave packet type model that is called a "photon" and a particle type model.

the development of coherence of light. The computer program involved several iterations, which raises the specter of chaos. However, chaos is avoided by having several feedback conditions that are also in nature. Passing the photons through a slit and matching the screen pattern to a Fraunhofer pattern demonstrated coherence. Other observations suggest the photon distribution in a laser beam and explain the Afshar Experiment.

The photon model was extended and modified to describe the single photon at a time in the experiment (Hodge 2015c, and references therein). This model suggested an experiment (Hodge Experiment) involving the varying illumination of coherent light across a slit. The prediction was found to be consistent with the observations of Hodge Experiment. The Hodge Experiment rejected all wave models of light.

This Paper expands on the Hodge Experiment to have the diffraction pattern from the first mask impinge on a transparent mask with a slit. The description of the experiment is in section 2.The toy simulation of the STOE model of a slit in a transparent mask is presented in section 3. The Discussion and Conclusion are in section 4.

2 The Description of the experiment

The experiment follows the layout and description of Hodge (2015c, section 2). The laser is 5 mW, 635nm that was made to be a pointer. The first mask was 15 cm from the laser. The second mask was 240 cm from the first mask, was 23mm thick windowpane glass plate, and had a 5 mm wide slit. The second mask was placed such that the width of the slit was approximately half the width of the central peak from the first mask. The screen was 66 cm from the first mask.

Figure 1 shows photographs of the images on the screen at each noted stage. The images in the photographs are actually red and have been converted to gray shades for printing. “A” is the image of the diffraction pattern from the first mask. “B” is the image of the diffraction pattern from the first mask with transparent glass without a slit as a second mask. “C” is the image of the screen pattern when a slit in the glass of the second mask is centered on the maxima of the major peak. Note the interference fringes. “C” is a typical interference pattern. “D” is the image of the interference pattern of “C” with a nail blocking the central maxima approximately 20 cm from the second mask and between the masks. The nail was positioned so the edges of the nail correspond to the minima of the central peak. The shadow of the nail on the second mask is wider than the slit. Note the interference fringes remain. Some nail edge effect can be seen, but the central peak and the light through the slit is blocked. The smaller images “C1” and “D1” are expansions of a section of the main images “C” and “D”, respectively.

The images are approximately the same size and spacing. The interference fringes in “C” and “D” indicate a double slit experimental arrangement is present. The interference fringes persist after the light through the slit is blocked.

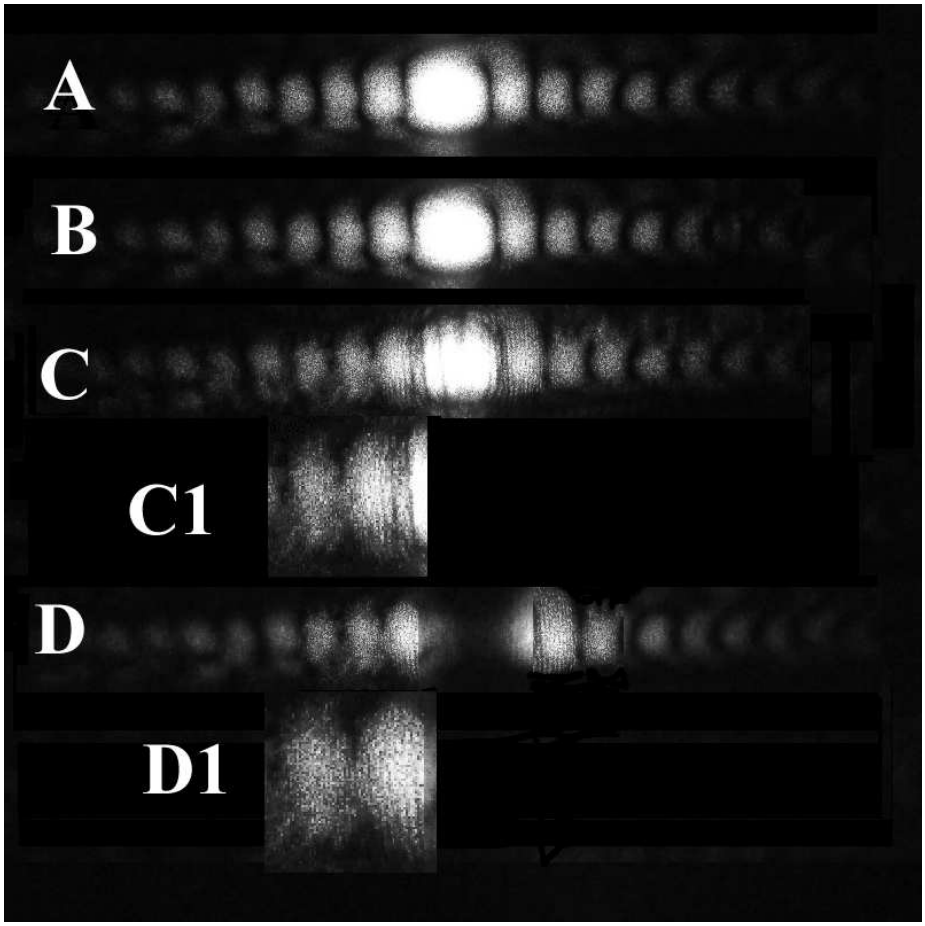

Figure 1: Photographs of the screen images at various stages of the experiment.

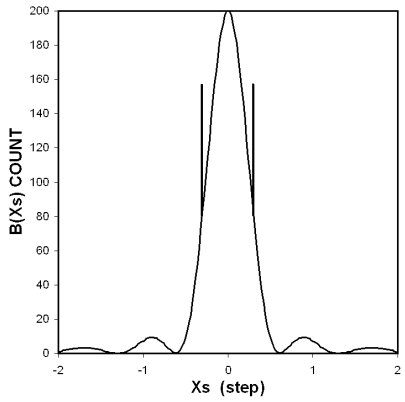

Figure 2: The toy simulation image on the second mask. The straights lines mark the width of the slit in the present experiment.

This experiment was repeated with a plastic film approximately 0.05 mm thick. The results were the same.

3 The Toy Simulation of the experiment

The toy simulation of the present experiment follows the development in Hodge (2015c). Figure 2 shows the Fraunhofer distribution pattern image on the second mask and the position of the slit.

The mechanism that allows a material to be transparent or opaque is not modeled, only that the material is transparent or opaque. However, the presence of reflective atoms in the mask or the lack of atoms in the slit is modeled.

Figure 3 shows the screen image of the toy simulation pattern. The data points are an average of seven cells. Figure 4 shows an expanded view of a secondary diffraction peak with the data points being an average of three cells. The diffraction peak is composed of three interference fringes.

4 Discussion and Conclusion

The second mask slit modifies each diffraction pattern peak from the first mask to produce the interference pattern on the screen. This explains the functioning of Young's Experiment. The diffraction pattern of a slit is modified by the other slit. Instead of the slits being side-by-side as in the traditional experiment, the slits in this experiment are one in front of the other.

The light from one of the lesser (not major) peaks of the first mask diffraction pattern is coherent with the light through the second mask slit. Wave models suggest the waves from the second mask slit expand and interfere with the waves

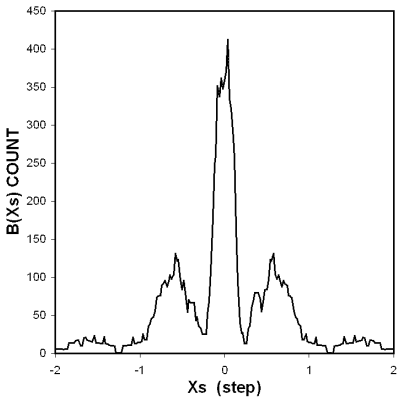

Figure 3: The screen image of the toy simulation program.

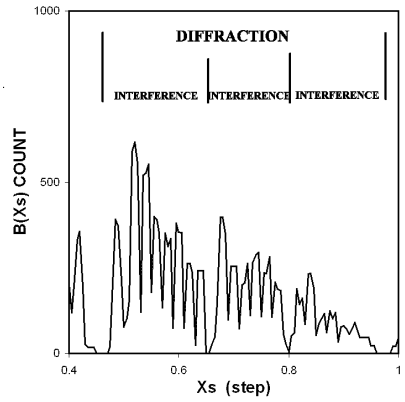

Figure 4: An expanded view of the first secondary diffraction peak showing the interference fringes.

through the transparent mask to form an interference pattern. However, the "D" image has the light through the second mask slit blocked. Therefore, the wave model is rejected.

The STOE model suggests a gap in the reflective atoms of the mask causes a slight change in the force influencing the photons through the transparent part of the mask just as in the double slit experiment. The important feature is the STOE model can explain the observed phenomena of the present experiment.

The list of problematical observations that the STOE explains continues to grow with an improved understanding of the universe (Hodge 2013, 2015d, 2016).

The Hodge Experiment was extended to model a diffraction pattern on a transparent second mask with a slit. The screen pattern was an interference pattern such as produced with two slits in Young's Experiment. A nail was placed between the first and second mask to block the light of the center maxima. The interference fringes remained in the secondary peaks. This observation rejects wave models of light that requires light through the second slit. The STOE model successfully modeled the observed pattern.

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