

Clothing Design using Moire Fringes from Multiple Sheets of Color Gratings.

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I. Introduction

These days are referred to as "the times of textile fashion," owing to the emphasis on textile design in the fashion industry. Accordingly, apparel companies have increased their interests in developing new types of textiles to overcome the limits of style and silhouette. Now the ultra-fashion of textile, a new way of process and design development, is given much more attention. An apparent tendency to use exotic textiles and new ways of processing, once considered odd and strange, is now arising. All the better, for they are pleasantly accepted and popular among people.

Moire fringes have a longer wavy circle of interference, an effect of intensity interference, than one made by piling more than one reflecting plate or transmitting plate. Till now, Moire fringes have been used to confirm scientific theory and to measure the structure of a body or a subject in areas such as physics and medical science.

Some effective Moire fringes among the parallel line gratings, radial gratings, circular gratings and square gratings were applied to clothing design in the previous study.

Contrary to the present usual stationary patterns of textiles, moire fringes have various patterns according to the different gratings, different angles, different ways of piling gratings, and the movements of the human bodies.

Through chiefly looking into the form of moire fringes in the preceding research, we executed the basis research to apply the colored moire fringes to the clothes.

For this research, the three colors of red, blue, green transparent films with parallel line gratings are used.

II. Research Methods and Procedures

In order to examine the application of moire fringes, that are formed by using the colored gratings, to clothing design, we made the three colors of red, blue, and green parallel line gratings on each of the three transparent films. Then we examined the forms of the patterns and colors that are formed on the piling transparent films in various ways. The followings are the results;

1. The forms of the patterns and colors of the moire fringes that are formed by piling two different colors of the parallel line gratings (the piling angles 5°)

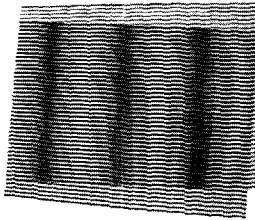


Fig.1. Piling the red grating and the blue one

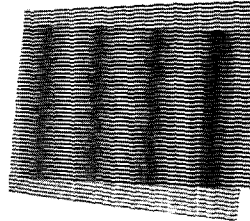


Fig.2. Piling the blue grating and the green one

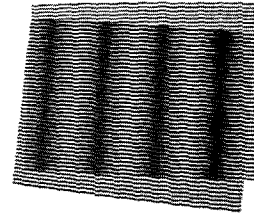


Fig.3. Piling the red grating and the green one

2. The patterns and colors of the moire fringes that are formed by piling three different colors of the straight line gratings

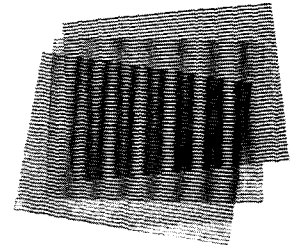
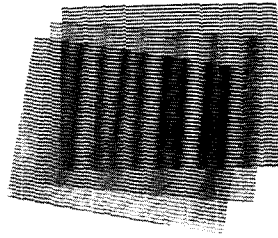
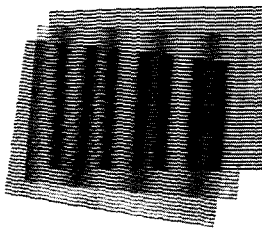


Fig. 4. The moire patterns that are formed by piling the red, blue, and green gratings (the piling angles 5° , 7° , 10°)

3. Piling the three different colors of the straight line gratings on the three-dimensional space

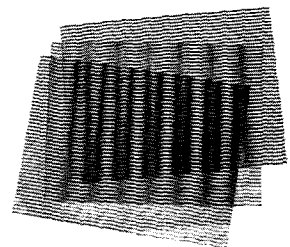
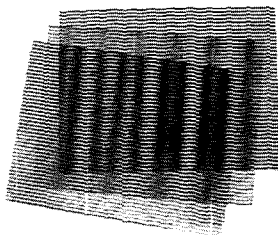
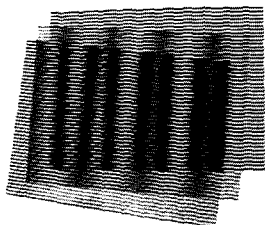


Fig. 5. The examples of arranging the three different straight line gratings on the three-dimensional space

III. Conclusion

As above, when the colored gratings were piled in many layers, various forms and colors of moire patterns were formed according to the number of grating plates, piling angles, and the changes of the piling space. The patterns that were arranged on the three-dimensional space showed various forms when they were seen from the different places. These three-dimensional moire patterns will be a new idea of patterns, forming a variety of patterns at any time, because the piling conditions are varied according to the movement of human body.

Though the colors and the piling conditions were limited in this study, when various colors, the kinds of gratings, and the piling conditions are properly prepared, interesting patterns that have not been represented in the up-to-now textiles are expected to show up.

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