

Techniques for introducing holography into middle school educational programs

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ABSTRACT

Holography is uniquely suitable as an educational unit for the middle school curriculum(1). By performing the simplest enjoyable experiments, students are introduced to many basic concepts of physics and myriads of technological applications. The most difficult part of introducing such a program to schools is convincing educators, teachers, and parents that holography is a worthy subject. The most effective way is to find opportunities to physically demonstrate to them how to make holograms safely at a low cost and to show them applications using real hologram.

Keywords: holography, education, demonstrations, geometric model, hobby

DEMONSTRATIONS

This paper is presented orally accompanied by physical demonstrations. The written version herein represents only an outline of these demonstrations for the record.

It is not possible to convince educators, teachers, and parents of children in the middle schools about the value of teaching holography by using words or pictures. Their concepts on holograms are based on trivialized applications shown in movies and simple examples in gift shops and authentication labels.

The following demonstrations are presented:

- True, full color holograms
- Deep scene hologram made by pulsed laser, its real and virtual images
- The redundancy of the recorded information
- E-beam lithographically recorded holograms
- Computer interconnect applications
- Computer storage applications
- Holographic optical elements
- The making of a simple hologram, including the detailed construction of a system
- Artistic applications

REFERENCE

1. Tung H. Jeong, "Holography and education in the United States", SPIE Proceeding Volume 1238, pp. 351-254 1989