International Journal of Latest Research in Engineering and Technology (IJLRET)
ISSN: 2454-5031
www.ijlret.com‖ Volume 2 Issue 4‖ April 2016 ‖ PP 23-24

A simple demonstration of the laser beam

Petar V. Vuca
Primary school "Dr. Tihomir Ostojic" Ostojićevo

Abstract: This work contains instructions for a school experiment with laser light. A physical experiment is a fundamental method for a physics teacher, used in revising and establishing certain lessons. There is a tendency nowadays to plan lessons of experimental work in the syllabus and to create conditions for their realization.
U paper provided guidelines for school demonstration experiments with laser light.
Keywords: Laser, plastic hose, fiber and balloon.

Of light through an optical fiber

The experiment is an active process that is focused a certain goal. During the experiment the teacher / professor managed senses and perceptions of students and based on them a phenomena and events. The experiment used a new material after exposure method testimony dialog method and explanation. The experiment has an educational nature in physics class if obvious when in pupils / students causing the impression that the teacher / professor counted.
The objectives of the experiment are different: observation of physical phenomena that explain the time, "discovery" of a law of physics or illustrations of law to which there is a theoretical way or the other way.
Introducing students to the practical application Basic methodological requirements for the experiment are as follows: good visibility emotionality.
Scientific accuracy and proper scientific explanation. View that is convincing The experiment should be connected with the material being processed on time Each experiment should be carried safely to succeed It should take into account the length of a visit In preparing the visit the teacher / professor takes into account the educational and pedagogical Fact [5]. The transfer of optical signals via optical fibers, like the laws of refraction and reflection of light on the boundary between two media with different refractive index n_1 mid denser, less frequent in the optical path, the refractive index n_2 (n_1> n2). Border angle of total reflection can be calculated from Dekart-Snelijusovog Act (taking assuming the groundbreaking angle 90 °)

$$\frac{sin\alpha}{sin\beta} = \frac{n_1}{n_2}$$

In optical fibers with a continual change of the refractive index no abrupt change in refractive index between the core and mantle. The refractive index is continuously changed from the axis of the fiber to the periphery as shown in Figure 1. When crossing the light beam through such a fiber, all the rays entering at an angle of less than α_0 gradually break stretching from the center to the periphery of the fiber to be totally reflected at the end . The path through the optical fiber approximates / similar to the sinus form.

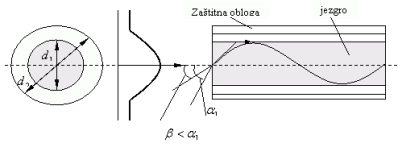

FIGURE 1. Optical fiber with a continuous change of the refractive index.

I was thinking that this is the pupils / students to demonstrate in order to understand how this happens in the fiber. I took MTT INFIZ Laser. Tanko transparent plastic hose to the small diameter brandy. He let the laser beam and noticed that the air extends approximately sinusoidal Figure 2. Dao pupils / students to do it themselves.

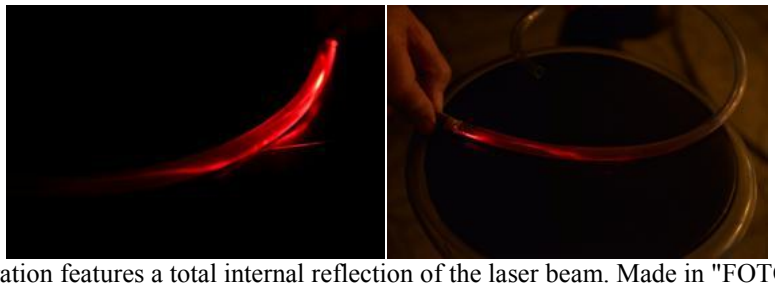

Figura 2. The illustration features a total internal reflection of the laser beam. Made in "FOTO SRETENOVIĆ". Photographer Vladimir Sretenović

How pupils / students in the cabinet of physics show that the moon shines by the sun. We MTT INFIZ laser. Taking two balloons. Damo pupil / student to insert a balloon in the other. I say that both inflates the balloon. The inner balloon inflates less. Commits both balloons individually. Hang the balloon can rotate. Allow the laser beam to the outer balloon. What can we see? Half of the balloon is bright, and the other half tamana Figure 3. Pupils / students enthusiastic. Each pupil / student and this can be carried out at home, because they can buy in the market laser and balloons are not that expensive.

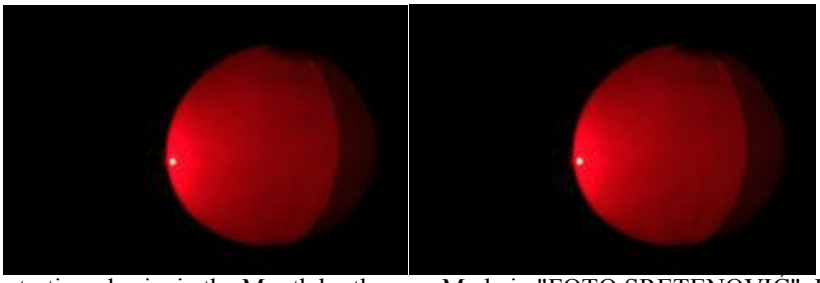

Figura 3. Illustration obasjanja the Month by the sun. Made in "FOTO SRETENOVIĆ". Photographer Vladimir Sretenović

REFERENCES

[1]. J. Simovic, D. Koledin. Practicum in biophysics, medical book Belgrade-Zagreb., In 1991.
[2]. R. Krsnik. Modern ideas in the methodology of teaching physics. School books. Zagreb, 2008.
[3]. Mitra Smiljanic-Grujic, prakrikum Demonstration in teaching physics, Thesis, Novi Sad, 2007.
[4]. Julien Clinton Sprott. Phusics Demonstrations, The University of Wisconsin Press, 1930 Monroe Street, Madison, Wisconsin 53711, Copyright,, 2006. W.S.Boyle, Scientific American 237,40 (Aug 1977).
[5]. E.E.Basch, Ed., Optical-Fiber Transmission, Howard W.Sams§Company: Indianapolis (1987).
[6]. A. Niculescu. Phys.Teach.40,347 (2002).
[7]. A simple demonstration of the laser stripe.