

Discovering Light and Optics

MFM Costa¹, B Vázquez Dorrio²

¹Universidade do Minho, Braga, Portugal

²Universidade de Vigo, Vigo, Spain

mfcosta@fisica.uminho.pt

Abstract. Optics is in our days indubitably one of the most important domains of physics. It is therefore essential that a solid knowledge on this subject is acquired as early as possible, right from primary school or even at kindergarten, in a process of active and participated discovery by the pupils themselves who naturally have an empathy, interest and special curiosity for this Light and Optics subject as it directly relates to one of our major senses: the vision. This 3 hours' workshop target the upper basic and secondary teachers. This section of the "Growing with Science: From Preschool to Adulthood" training course aims to introduce a hands-on approach to the study of basic concepts of light and optics. A series of demonstrations and experiments will be carried out and explored on topics such as: the nature of light and its properties including coherence and polarization, frequency and wavelength; speed of light and refractive index; the basic principles of geometric optics; Interference and diffraction; holography and optical fibres and waveguides.

Keywords. Hands-on optics, light, optics, teacher training.

New Ways of Looking at Physics

F Neri

Escola Secundária de Amares

Amares, Portugal

fernanda.neri@nery.name

Abstract. The use of different resources in the classroom has driven to better results, in the "teaching-learning" process, not only concerning the learning experience but also increasing motivation to science. The use of sensors in practical activities could represent an advantage when trying to motivate the students. TI – Nspire – CX with the Data Collection Systems and Sensors allows the realization of experiments in which the collected data includes small time lapses, extremely long data collection, eliminates accidental error and allows simultaneous measurements.

It also allows teachers to create dynamic scenarios, making the comprehension of the subjects easier.

This workshop intends to explore some practical activities of Physics using Sensors.

Keywords. Physics, sensors, measurement.

References

- [1] Neri, F. "O Ensino e a Aprendizagem da Física Experimental do 10º ano de escolaridade: Uma abordagem tecnológica", Dissertação de Mestrado em Física (Ensino), Universidade do Minho, Dep. de Física, 2013.
-
-