

Low-cost light interference experimental set with automatically display intensity of interference and diffraction patterns

Interference and diffraction of light are properties of light studied in the secondary school and university. General interference experiment can display interference pattern as only a light-dark interfering stripe but it cannot be used to studied in depth to the intensity of interference and diffraction patterns. Therefore, the purpose of this research was to develop an experimental set that can automatically display interference and diffraction patterns of the light in graphs according to the magnitude of the light intensity at different positions. This experimental set was designed using an affordable microcontroller and compact sensing devices for detecting light intensity based on interference position. An open source was applied for operating program to control the experimental set automatically. It used a computer, which is a basic device commonly used, to be a user interface and to display the interference patterns in real-time. The developed experiment set was tested using single and double slits. The intensity and patterns of interference and diffraction from the experimental set correlate to the intensities of interference and diffraction generated from the theory. These results demonstrate that the proposed experimental sets can be used to study the interference and diffraction of light.

Primary author: Dr BUAPRATHOOM, SOMPORN (Mahidol Wittayanusorn School)

Presenter: Dr BUAPRATHOOM, SOMPORN (Mahidol Wittayanusorn School)

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