

Lesson Plan

Aims:

- Learn the difference between Quantum Physics and Classical Physics
- What is the famous double slit experiment
- First confrontation with the wave-particle duality

Resources:

- Power Point Presentation
- Videos for visualization
- Computer simulation to do a virtual experiment

Task 1:

Explain class what the aim of physics is – namely understanding nature phenomena and describing them via mathematics to have better predictions. But for the microscopic world we need another theory – Quantum Mechanics.

Video 1:

Let them watch and have a discussion about the video. Did they understand the concept of interference? Did they get that light is a wave?

Video 2:

Let them watch and have a discussion about the video. Did they understand that light consists of particles – photons? Did they understand that even if light is made of particles that the resulting pattern is exactly the same as if light were a wave?

Simulation 1:

The students should open the simulation and try out the various combinations of slits. Empirically find out the influence of slit width, slit distance to screen, light wavelength etc. on the interference pattern. Here the aim is to give them a feeling about the quantum world.