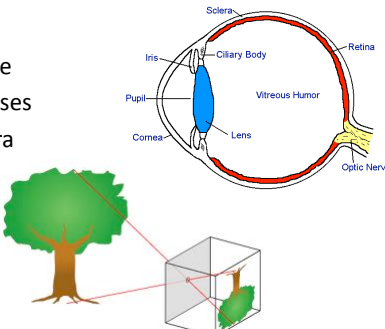


PHY385-H1F Introductory Optics

Class 12 – Outline: Section 5.7, Sub-sections 5.7.1 – 5.7.6

- Fibre-Optics
- The Human Eye
- Corrective Lenses
- Pinhole Camera
- Camera
- Depth of Field



Physics Departmental Colloquium This Week
UNIVERSITY OF TORONTO

Physics at UoT Students Research Our People

/ Departmental Items / Physics Colloquium / Wave-particle duality at the

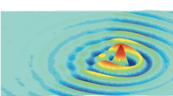
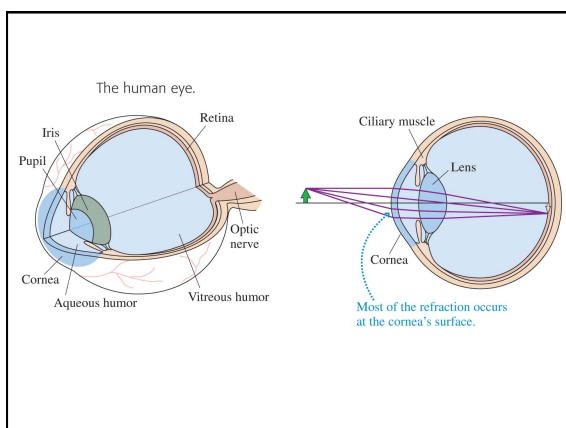
Wave-particle duality at the macroscopic scale

— filed under: [Physics Colloquium](#) Date and time: Oct 27, 2011 from 04:10 PM to 05:00 PM

Yves Couder Location: McLennan Physics (MP) 102

Université Paris Diderot Host: Stephen Morris

“[The double-slit experiment] is impossible, *absolutely* impossible, to explain in any classical way, and ... has in it the heart of quantum mechanics. In reality, it contains the *only* mystery. We cannot explain the mystery in the sense of “explaining” how it works. We will *tell* you how it works. In telling you how it works we will have told you about the basic peculiarities of all quantum mechanics.” - **Richard Feynman**, *The Feynman Lectures on Physics Volume I*, Ch.37

Eyes

- The compound eye is made of many ommatidia. Each detects light from a certain direction, and sends an intensity signal to the brain.
- Human eye is a positive double-lens arrangement which projects a real image onto a light-sensitive concave retina.
- Most of the focusing power of the eye comes from the air-cornea interface.
- The lens is pliable (although less so with age), and so it has a variable focal length.

Retina

- The retina is filled with rods and cones
- The spot where the optic nerve exits contains no receptors and is insensitive to light: **blind spot** (we don't notice it because our brain fills in the gap with what it expects)
- At the centre of the retina is the **macula**, which contains twice as many cones as rods
- At the centre of the macula is the **fovea centralis**. It contains no rods, and the cones are very densely packed.
- We constantly move our eyeballs to cause the light coming from the object of primary interest to fall on the fovea centralis.

The Normal Eye

