

Re: Young's Interference, on the cheap

## Re: Young's Interference, on the cheap

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- *From:* "hhc314@xxxxxxxx" <hhc314@xxxxxxxx>
  - *Date:* 16 Nov 2006 09:15:32 -0800
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Bob, then you are an "old fart" like myself. :-)

Actually, you're not quite that old, since the first edition of Halliday and Resnick was copyrighted in 1970, while Sears and Zemansky dates back to 1949. Still, both are excellent introductions to physics for the serious student.

On a plus note, you've inspired me to visit Radio Shack and pick up one of those laser pointers to play with. My only laser currently is a surplus assembly from an early supermarket scanner that will eventually either electrocute me or zap out my eyeballs! (In my case, having cataract lens replacements in both eyes, I need to be a little cautious. Too much neutron flux in my earlier years...I guess.)

Harry C.

Front Office wrote:

hhc314@xxxxxxxx wrote:

Sorcerer, actually I should have steered him to a textbook explaining Young's Experiment rather than some simplist web crap.

A little late, but here are two:

"Fundamentals of Physics", Halliday & Resnick. Page 784.

Good ol' Halliday & Resnick. I've had both volumes for over 40 years now. I consult them often — so often the cover has fallen off Volume II, the one with page 784. Wonderful set of books.

Bob

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"University Physics", Sears & Zemansky. Page 836.

One or both of these are available at most libraries (college and public). Both are written at the level of Physics 101, and should be quite readable for any highschool student. In this case no knowledge of calculus is even required, although a basic working ability in algebra of trigonometry will help to comprehend the idea.

The important concept here is to understand the Young's Experiment requires two separate the phase consistent beams. Coherent laser radiation is not required to perform the experiment, although it makes it far easier. If you don't understand how these two beams are created, or the difference between diffraction pattern and interference pattern, you need to refer to a textbook, not the web.

Harry C.

Sorcerer wrote:

<hhc314@xxxxxxxx> wrote in message  
news:1163558688.210428.145010@xx  
| What did you use for the beam splitter? Young used two  
| slits, and the  
| article that you cited employed a card. You did use  
| something to split  
| the beam, right, since a pinhole will not do that.  
|  
| The pinhole alone will give you a diffraction pattern, not an  
| interference pattern as in Young's Experiment. While both  
| interference and diffraction are both consequences of the  
| wave nature  
| of light, they are quite different effects. Please take time to  
| learn  
| the difference, else an error of this type can cost you dearly  
| on an  
| advanced college placement exam.  
|  
| For a simple sanity check, when you replicate the two beam  
| experiment,  
| make some simple measurements and compute the observed  
| wavelength. Then  
| compare your result with that published for your laser  
| pointer.

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| Physicists and engineers refer to this as a sanity check,  
without which  
| you don't know what you are observing or its experimental  
validity.

| Realize that I am trying to be helpful, not critical.

| Good luck and kindest regards, Harry C.

About as much help as a tit on a bull.

You could at the very least have steered him to one of these

<http://www.google.co.uk/search?hl=en&q=diffraction+grating&btnG=Google+Search&meta=>

Front Office wrote:| > I think I might have succeeded, on the  
cheap, in doing| > Thomas Young's demonstration of the  
wave nature of| > light. Photos are at:| >| >

<http://www.flashevap.com/Young.jpg> | >| > I used a Radio  
Shack laser pointer and a piece of brass| > shim stock with a  
pinhole in it and a 0.005-inch diameter| > wire in front of the  
pinhole.| >| > I projected the pinhole light about two meters  
across| > my office and onto the wall, where I took photos of|  
> what might be interference of the red light.| >| > The  
version of the experiment I am copying is shown| > at the  
site of the Cavendish Laboratory:| >| >

<http://www.cavendishscience.org/phys/tyoung/tyoung.htm>|