

Re: New look for classic double-slit quantum-interference experiment

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From: Quantum Mirror (*junebug_at_pgrb.com*)

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> *I say that because I don't believe complementarity can act as a slit!!*

> *I'm not sure anyone says it has done so...*

In the physics web article the writer says:

The researchers observed interference fringes at the first detector because it was impossible to know if an electron counted by the detector was produced during the first or second maximum.

There was no interference pattern at the second detector because all the electrons were produced at the same time at the minimum. However, when the phase of the laser was changed so that there was one maximum and two minima, interference fringes were seen at the second detector but not at the first.

What he is saying is mum-bo jumbo as it turns out. but the way he put it since we were unsure which of the two maxima created the electron, interference is possible (complementarity). "We have complete which-way information and no which-way information at the same time for the same electron," Paulus is referring to complimentary again here but the writer has it wrong. Using the two maxima as slits is what the whole article is about so I said that means complementarity is the slits!

> *For long pulses, in every optical cycle
> identical packets are created."*

What he is saying is: for every optical cycle (a minima and a maxima) there are wave packets produced which is part of the structure of the above threshold ionization (ATI) and when two are produced with the same momentum, interference results. The real important part of this work is the profound effects of the ATI and the amazing window it has opened to study atoms. There may be a paper after this one that the physicsweb article was taken from but he explains it quite clearly here

sci.physics: Re: New look for classic double-slit quantum-interference experiment
if you read very carefully!

PS Yes that is the paragraph I was talking about.