

Game 13

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What did Einstein discover in his work on Photo-electric effect?

Einstein was shooting various colours of light at varying intensities, but no matter what the intensity was, it would only be dependent on the colour (wavelength / frequency) to determine if an electron would be released from the plate or not. With this, he was able to come to the conclusion that they were in bundles.

What did de Broglie find, state the equation, and discuss what you understand from it and his findings

Because Partical-Wave Duality exists, other things could also be waves besides light. The circumfrence of the electron orbit must be $X \times$ wavelength. He also found out the electrons were in waves around the nucleus instead of actually moving around. His equation is the following:

$$\lambda = h / (m \cdot v) = h / p$$

He was able to use this to show hydrogen's light specturm and how it absorbs and emits certain frequencies from electron emission from $n \geq 2$.

What did you learn about the structure of atoms from today's content?

Electron simply did not have energy, the energy is only radiated when the electron changes which orbit it is in. It could be used to predict what colour would be displayed. As long as the electron is in the same orbit, it would not radiate any energy. I did not know that sub-atomic particles could just "instantly teleport" from one point in space to another

What are your challenges with modern physics, what are YOU struggling with?

I do not quite understand how schrodinger was/is able to apply the quantum mechanics of every atom, but I think for that it is due to me not fully understanding how it works. Something else I do not quite understand is how every state is possible to exist at the same time with quantum, that is just something I don't grasp yet, and I think that is because I am so used to everything being binary, 0 or 1.

Other notes

Partical-Wave Duality

Sub-atomic particles are allowed to dissapear and reappear within a given space. particles around a nucleus are allowed to move around as well, and that is what determines the "outer bounds" of the nucleus.

Peaks of the wave is where particles **Usually** show up at, and at the mid-point is an area that particles avoid "can I describe the world in tiny particles and explain everything with that"

If measuring the presence of electrons itself causes them to get disturbed, I think that is why when they tried to measure the particles as they were going through the slits is why it went back to acting as a particle vs as a wave.