Confusing Copenhagen Complementarity

John-Erik Persson  
Fastlagsvägen 2, 12648 Hägersten, Sweden  
e-mail: perssonjohnerik@rocketmail.com

It is demonstrated that the reason to the wave or particle confusion was produced already when Maxwell introduced the wave model for light. Einstein did not produce the first contribution to this confusion although he produced other errors. When light is observed in a telescope, or in an interferometer, the observed direction of light is independent of the ether wind.

1. The Wave Model for Light

The wave model demands an ether to do the waving. The real motion of light can therefore be described as a vector sum of wave vector $c$ and ether wind $v$. Maxwell assumed an ether but did not regard the ether wind. The vector sum $c+v$ is relevant for focused light where the centre of a beam can (theoretically) be detected and demonstrated to be dependent on $v_t$ (the transverse component in the ether wind). However, wave front orientations inside such a beam are not changed by $v_t$ blowing inside the planes of these wave fronts because the effect is the same over the wave front. Since the telescope detects unchanged orientations the transverse ether wind $v_t$ cannot be detected and is irrelevant to the telescope. Therefore, the observable motion in a telescope is $c(1+v/c)$ ($v_t$ is component in $v$ parallel to $c$), as long as we observe not focused light. Orientation of wave fronts can only be changed by different values in $v_t$ in different points in the wave front. That is by a gradient in $v_t$ and not by $v_t$. The telescope detects the normal of the wave fronts as observable motion and not real motion. $c(1+v/c)$ and not $c+v$. The distinction between real and observable direction is important. The irrelevance of $v_t$ in a telescope means that stellar aberration provides no information about the ether wind.

The description $c(1+v/c)$ is relevant for interferometers as well. In an interferometer wave front orientation is defined by mirrors and always parallel to these mirrors independent of $v$. Therefore, $v_t$ is irrelevant in interferometers as well. Only longitudinal component $v_t$ is relevant in interferometers. $v_t$ cannot reduce Michelson’s prediction, as Stokes said, and not produce time dilation, as Einstein said.

2. Stellar aberration

Bradley explained stellar aberration based on the particle model for light. An observer changing his own motion from zero to $u$, in a direction transverse to light motion will observe light motion to appear changed an angle $arctg(u/c)$. This follows from transformation of coordinate systems. We can also see this effect by regarding the telescope’s motion during the time it takes light to move from refractor to detector. The effect can also be described by an observer, not knowing his own change in motion, and therefore assume that the observed phenomenon has changed instead. This effect in a moving telescope is independent of if a wave or a particle is moving from refractor to detector. A not changed particle track or a not changed wave front normal is apparently changing in the same way when the real change is in the observer motion. Therefore, Bradley’s derivation for light particles is valid for light waves as well and observer motion $u_t$ is relevant. (We have earlier seen that $v_t$ is not relevant.) Therefore, a gigantic mistake was done when the assumed cause of stellar aberration was shifted from $u_t$ to $v_t$ in connection with the introduction of the wave model for light. The entrained ether was therefore refuted on false grounds. The existence of waves was used to exclude the existence of the wavering. An absurdity reported to NPA many times.

3. The Particle Model for Light???

Einstein promoted a comeback for Newton’s light particles by means of observations on matter in the form of discrete electrons in the photoelectric effect. These particles produce quantization and we can therefore not conclude quantization to exist before detection. Instead of these absurdities we can easily explain the photoelectric effect according to the wave model for light. Incoming light waves can interfere with blackbody radiation from bound electrons. Bound electrons generate wave functions (including harmonics) which can interfere with incoming light waves. This is possible if $f(light)=n_f(orbit)$. The electron will thereby experience a changed force transverse to motion, and the electron’s orbit is disturbed. This means a change in potential energy. This energy comes probably from the ether. The electron’s kinetic energy is not changed and must therefore exist before the photoelectric effect phenomenon.

These new assumptions imply a demand for high kinetic energy in bound electrons to make this interaction with light possible. This demand is more realistic than the common assumption that almost stationary electrons exist on the surface of a conducting crystal. The demand for high speed can explain $AE=hf$. In this relation $f$ represents a wave property which Einstein used to ‘prove’ a particle property. This was a mistake.

4. Conclusions

Real motion of light is $c+v$. However, Observable motion of light in telescopes and interferometers is $c(1+v/c)$. Transverse ether wind $v_t$ is irrelevant in most kinds of experiments. Stellar aberration can therefore not rule out the entrained ether.

The photoelectric effect can be described by the wave model for light and by interference effects. We do not need the particle model for light.
