ESSAY 81 : Inference of the Heavy Photon.

The term “photon” was not coined until the mid twenties, the old quantum theory rested on the idea that energy is quantized so that energy became proportional to frequency through the Planck constant. These ideas were put forward at the turn of the century, and it took until the early twenties for de Broglie to propose the idea of wave particle dualism. In essence this idea means that momentum is also quantized. Momentum becomes proportional to wave-number through the same Planck constant, and this has been verified experimentally through the observation of matter waves. Thereafter de Broglie proposed a set of equations which equated the quanta of energy and momentum to their counterparts in special relativity for a photon of mass m. These are usually known as the de Broglie / Einstein equations.

These are little known in “standard” physics because the latter rests on the dogma or cult science of the massless photon, one of the strangest ideas in the history of thought. Accordingly there is great confusion about the nature of light in standard physics, whose claims to precision are by now well known to be empty and dogmatic. It is claimed that Compton scattering proves the particulate nature of light, but at the same time it is claimed that this particle has no mass. These ideas lead to the absurd conclusion that two of the four dimensions of spacetime are missing in the vacuum: the timelike and longitudinal, but magically reappear when light interacts with matter. The reasoning behind this conclusion is essentially pure mathematics devoid of physics and Baconian testing. For example the Gupta Bleuler condition is used to “eliminate” two dimensions of spacetime so that a massless photon means that only the two transverse dimensions exist. This is of course completely absurd. This fantasy is compounded by the usual assertions that the “Maxwell” equations lead to zero photon mass and transverse components in the vacuum. They do no such thing. The “Maxwell” equations were in fact devised by Heaviside from a very complicated system of equations proposed by Maxwell. So a massless photon means that spacetime is flat in a vacuum and has no time-like or longitudinal component.

This dogma has been challenged many times by many able scholars, the most daring and original idea of the twentieth century in electromagnetism being the B(3) field inferred in 1991 and published in Physica B in 1992. The B(3) field changes the cult physics known as the standard model into photon mass physics, a physics which is self consistent and free of mathematical absurdity.

The way in which Compton developed the theory behind his well known experiment is not known very well, even though it is an undergraduate or school experiment. Compton assumed from the beginning that the photon has no mass, so the theory is automatically incorrect, it leads to the absurdity that two dimensions of four dimensional space-time are missing. The experiment in essence consists of scattering or bouncing light off a static electron held in a metal foil. The electron is stationary and its rest energy is described by special relativity (E = m c squared, a famous equation but very little understood). The de Broglie / Einstein equations are applied only to the electron and are not applied to the photon, and it is claimed irrationally that the experiment produces the mass of the electron.

In UFT244 the equations describing the Compton effect were developed without assuming that the photon mass is zero. The mass of the electron was taken from standards tables using other experiments that do not assume a massless photon. The result is that the mass of the photon is about the same as the electron. The mass of the photon is however interpreted through ECE theory as a curvature following the method of UFT158 to UFT160. The “heavy photon” has therefore been inferred. It is named like this because it is orders of magnitude heavier than thought previously from experiments such as those designed to test the precision of the Coulomb law and Ampere law. These laws have always been found to be very precise experimentally, so it was wrongly assumed that the photon mass is very small.

These assumptions were based again on abstract mathematics, a solution suggested by Yukawa many years ago which was meant as just that: a suggestion and nothing else. The discovery of the heavy photon means that the Yukawa potential is meaningless, because it leads to a photon mass many orders of magnitude too small.

However there is a loud caveat or caution, the basics of particle scattering theory collapse when scattering is considered in terms of the Einstein / de Broglie equations, for example conservation of energy is violated self inconsistently as described in UFT244. In UFT158 - UFT170 many appalling self inconsistencies were found in the cult physics known as the standard model. These are not cured by quantum electrodynamics, string theory or the currently fashionable “Higgs” theory. The “Higgs” boson is pure fantasy based on more than twenty adjustable parameters.

These results are challenging for any honest intellectual unaffected by cult dogma masquerading as natural philosophy. The cult dogma is well known to ignore refutations and has done so for a century. With physics like that, who needs LSD?