ESSAY 87 : INELASTIC COLLISIONS IN PARTICLE PHYSICS AND LOW ENERGY NUCLEAR REACTORS

One of the best known examples of particle collisions in physics is Compton scattering, which is the scattering of photons from electrons held in a target such as a metal foil. The theory of Compton scattering assumes that the photon is massless, and that it collides with the initially static electron in an elastic process. The total energy before collision is that of the photon plus electron. After collision the total energy is the same, that of the scattered electron and scattered photon. In UFT158 to UFT171 and in recent papers it was shown that the theory becomes wildy wrong if it is assumed that the photon has mass. This kind of theory of elastic scattering also becomes wildly self inconsistent when any two particles of mass (or massive particles) collide elastically. The original theory of Compton scattering relied directly on the newly inferred wave particle dualism of Louis de Broglie. This was also studied by Peter Debye who asked his student Erwin Schroedinger to produce an explanation for it - the famous Schroedinger equation. Arthur Compton effectively assumed that the quantum theory of Planck, Einstein and de Broglie must be compatible with special relativity. Compton was almost unbelievably lucky, because it is now known that his type of theory is the only one that works. As shown in the already mentioned UFT papers it falls apart in all other circumstances. This was first discovered by Horst Eckardt and myself in 2010. Our findings were posted and published, and have been accepted as mainstream physics.

The first attempts to remedy this drastic failure of particle physics used R theory, which is based on the well known R parameter of the ECE wave equation inferred in 2003. These attempts are recorded in UFT papers such as UFT160 to UFT171. The basic idea was to develop the concept of mass itself so that mass could become a property of geometry, notably Cartan geometry from which R is inferred. This gives a plausible explanation of the catastrophe for particle physics which became a ghastly reality in UFT158 to UFT171. The standard particle physics failed at a fundamental level and therefore on all levels. CERN probably knows that its theory is rubbish but still applies for the billions. CERN certainly knows of UFT225 which proves that the electroweak sector of the CERN theory falls apart on scholarly scrutiny, but CERN still applies for the billions.

The R theory of particle physics works well, provided that is accepted that mass is more than just a number in the standards laboratories. For physicists more used to thinking of mass as a constant, a new theory of particle physics was developed in UFT246, one based on inelastic scattering. The inelastic scattering process is one in which energy is given off following the collision of two particles. The collision may result in scattering, annihilation or transmutation. An example of such a process is electron positron collision, which has been studied for thirty five years or more in ultra expensive particle colliders. Electron positron collision may give off photons at gamma ray frequencies, and other types of elementary particles each with their characteristic energy peak. In low energy nuclear reactors (LENR) energy is given off after transmutation following the nuclear fusion of two colliding particles. These are both inelastic processes. The total energy after collision is the energy of the two particles added to an extra energy term. The total energy before and after collision is the same. Similarly the total momentum before and after collision are the same. In addition, the total angular momentum and total charge before and after collision are the same.

In UFT246 it was shown that the extra energy produced in an inelastic scattering process can explain the wild self inconsistencies discovered in UFT160 to UFT171 without having to use R theory. So in UFT246 a self consistent theory of inelastic particle collisions was developed on the fundamental relativistic level. This theory maintains the de Broglie wave particle dualism intact, and so maintains intact the assertion that quantum mechanics is consistent with special relativity. R theory achieves the same aim in a different way. The

difference is that inelastic particle collision theory uses the familiar concept of constant mass, while R theory generalizes mass into geometry.

In the meantime CERN keeps on fiddling the billions while all our fuel burns. We have only a very short time left to remedy this potential Great Depression.