A particle model explains relativity and QM-related properties in a classical way

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We will present a particle model which explains the properties of elementary particles based on a classical understanding of physics. This means that the use of quantum mechanical methods is largely avoided.

Based on the known properties of leptons and quarks, a model can be deduced which is able to account for their magnetic moment and the constancy of their angular momentum (spin) by assuming that those particles are extended and that their constituents oscillate. The fact of extension also explains the inertial mass of a particle in a fundamental way and with precise results. This includes the relativistic behaviour of mass. The internal oscillation and the field behaviour explain relativistic dilation and contraction without resorting to Einstein's speculative ideas about space and time. As a result, special relativity is related to physics rather than to mathematical structures and this connects relativity to the rest of physics. This conforms to the *Lorentzian* approach to relativity.

We will further look at particle wave duality. In the 1920s, Louis de Broglie postulated that particles like the electron should also have wave properties, and he explained the duality of the corpuscle and wave in a way which avoids the usual mystifications of QM. His model of a particle being a corpuscle surrounded and guided by a "pilot" wave is one that can be readily visualised. However, at the time there was no explanation for the physical origin of the pilot wave and this undermined the general acceptance of his idea. The particle model now presented explains the corresponding origin very naturally.

On the other hand, de Broglie made some unnecessary assumptions, such as the "harmony of waves" which have a superluminal phase speed. He used this to avoid a conflict which he saw in the relativistic behaviour of an oscillating particle. We will show that this conflict does not in fact exist and that by neglecting this apparent conflict de Broglie's idea can be completed straightforwardly. This also affects the Schrödinger equation as well as the Dirac function.

Regarding General Relativity, we will present a comparison between the derivations of the Schwarzschild equation, on the one hand using Einstein's (curved) space-time structure and alternatively following Lorentzian relativity, which is based on physical facts rather than space-time. Through this example, we will demonstrate how much easier and more physics-related Lorentz's approach is.

For details see:

[1] www.ag-physics.org

[2] Michael C. Duffy and Joseph Levy, *Ether Space-Time & Cosmology*, Vol. 3, Apeiron (2009) 143 – 192