

## ENDING THE MYSTERY OF WAVE / PARTICLE DUALITY

After science has made sure a certain phenomenon is a repeating fact, but cannot determine the causes of the fact, the matter qualifies as a mystery. It is a long accepted surety that a particle such as the electron in some cases tests as being an energetic point, and in other cases appears to act like a wave. That is one way of stating in essence the idea called Wave/Particle Duality.

But stating a title for a mystery does not solve the mystery. A hundred wave theories were advanced in past years as solutions to the wave/particle mystery. Some seemed plausible but were inherently more magic-like than revelatory. For example the wave-collapse theory, which could be condensed like this:

*An invisible wave pattern, evidently shaped as an electron-sized, spheroid "cloud", is the target of a laboratory measuring device which shoots x-rays. At the moment such a device makes contact with its target, the "probability-wave" cloud "collapses" to become a point-particle electron. The same thing happens naturally when an electron in its "wave nature" strikes any object.*

*But to go beyond the above, it was later theorized that when intent to contact or measure a particle is present, the collapse theory expands. Consciousness itself becomes the agent transforming the electron's "wave nature" into its point-particle nature. Don't you agree that seems a bit akin to magic? (Or at least telekinesis?)*

### **Metaparticle structure provides new understanding of wave/particle duality**

The theory of electron structure as a rotating dynamic disk enables one to understand and thus solve the mystery of wave/particle duality -- it does so in a way that illumines many instances of particle behavior which also long endured as mysteries. Metaparticle explanations do not challenge normalcy as did wave-collapse, multiple-universes, pilot-waves and other past theories, and in many cases are straightforwardly testable.

We present below what we think is the quickest, surest way to get across the basic facts dispelling the mystery of wave/particle duality. Be it noted that such plain logic does not do away with a certain pragmatic duality which can continue to be of use to particle physics.

In commenting on the graphics below, I hope for tolerance from those readers who may be current in particle science; doubtless they already know what I must strive to make clear to other readers.

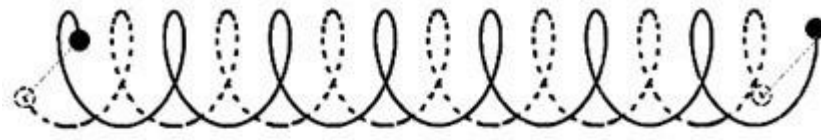
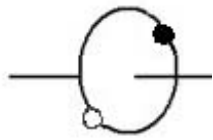


Fig. 6a

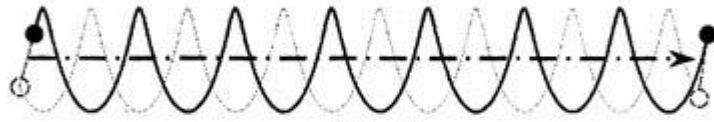


Fig. 6b

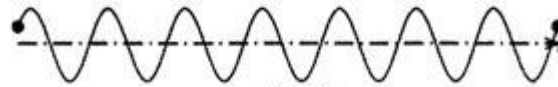


Fig. 6c

At left of the diagram in Fig. 6a is shown the basic, bipolar metaparticle structure on its axis of spin-rotation. When this two-dimensional disk-like form moves linearly (left to right) it describes a double helix in spacetime. The spiral pathway taken by this electron's lesser pole (black dot) is the charged point perceived by scientific methods. The metaparticle's greater, more energetic pole (white dot and broken line) is theorized as existing in a higher or more intense range of matter.

But this second, invisible pole has a functioning reality as indicated by its influence through linkage with the physical pole -- which for so long was considered as incorporating the entire electron. It is this real though invisible balance between an undefined attractive force and the opposing force of angular momentum that operates along an interpolar diameter to maintain the electron. This is what makes interior rotation possible, according to metaparticle theory.

In Fig. 6b the wave length of the double helix is increased to conform better to the conventional idea of a particle wave. Finally, the diagram in Fig. 6c eliminates everything except the ordinary wave concept itself, allowing the wave/particle duality puzzle to be clearly resolved.

We focus now on the electron's black particle-dot in Fig. 6c, and its wavelike pathway or track created when the dot moves through space. (Note that the black dot is still rotating as shown in Figs. 6a and 6b. Its interpolar linkage with the second, invisible pole has been dropped out for simplicity.)

Some questions can now be asked. The black dot, which began at left, reaches the position shown at right. The pathway it has followed is depicted as a black wave-line. After the dot has passed from left to right, that pathway still exists on the paper, but does that pathway still exist in space? No; the "wave-track" ceases to exist as the "point-particle" dot moves past each point along the pathway. What then is the experienced actuality of the wave-track?

The "wave" is simply the pathway described by the point. No one, it is said, scientist or otherwise, has ever seen, contacted or defined the exact reality of a particle's "wave nature".

Neither has anyone ever tried to probe a wave without finding a particle instead. The dot persists in actual existence, but the wave-track does not. Does this mean the track is unreal?

But how could it be totally unreal? If it is recalled as in the past or projected into the future, then is it accurate to say a wave-track has reality in spacetime? I think so. Take the examples of an artillery shell's trajectory or the orbital track of the earth around the sun: Aren't these in an important sense real?

I believe that strict analysis would indicate the wave-track of a point-particle has to be granted reality, but only a temporal reality. In a sense it exists only in the past and future. I have found no scientific discussion of this, but I would guess Physics now considers the particle wave to have a non-physical but real existence in the temporal aspect of spacetime.

It is the recent scientific acceptance of structure in fundamental particles that has introduced interior "spin-rotation" as a major element in progress towards a New Standard Model. Without such rotation many instances of particle behavior could never be satisfactorily explained -- with or without Superstrings. And you can't get rotation without a radius or a diameter between two points, just as you can't roll on half a wheel.

The now and future salient question will, for a time, be How will scientists explain the way they are getting their second point, which is indispensable to all stable, rotating particles?

In an earlier effort (mostly in the eighties and largely unnoticed by Physics) what we now call the Metaparticle Theory actually began with a premise which stated the necessity for two poles "of the same substance" in creating basic matter. It was further stated in the premise's source that such two poles "cannot exist without each other". Our contribution was to recognize rotational motion as the force keeping the poles from recombining (due to some unnamed attractive force) -- and disappearing.

This seems to have drifted somewhat in the direction of etiology. But I believe such is unavoidable if we are to have an understanding of wave/particle duality that is more than just plausible. It must be convincing at a deeper level of inquiry. In this connection it is important, I believe, to identify the seriously misleading, false duality that can now be erased from Physics by the concept of spin-rotation. This false duality implies that wave and particle are alternating identities of the same mysterious reality. But we see now that when the probe seemed to turn waves into a point-particle, it was actually demonstrating that only the particle was physically there all along. Its motion makes the waves.

But wave-tracks will surely continue to reveal more knowledge about their energetic physical creators. Particle waves may be transient effects of the motion of points, but those motions never cease. So waves, in a sense, are always there also. They remain important factors in the efforts of Science to acquire the complete truth of fundamental particles. And I would forecast that as investigators penetrate farther and farther into what once would have been called abstractions, materialism will also expand its parameters of empirical reality.



**Metaparticle Evidence follows on next page**