Prove Me Wrong About Physics

Introduction

I have a few controversial views on physics concerning the nature of light, molecular bonding, and gravity itself.

I offer these as a challenge to those intrigued by such mysteries to add to the discussion, and hopefully either confirm or refute them. I have no ego stake in this game, and seek only to promote or receive a broader understanding of energy transfer and interactions.

On the other hand, if I can provoke someone ensconced in traditional understandings enough to discover and reveal errors in my assertions, I would consider it a tremendous favor

In addition to the discussions to follow, I have published a SciFi novel, in which some of these theories are essential to the plot. This was my attempt to at least get them out into the public domain.
https://www.lulu.com/en/us/shop/william-huff/the-livewood/paperback/product-1erj2p5g.html?page=1&pageSize=4

Assertions about science

I consider theories supported by data, and repeatable experiments. I do not consider endless speculations that do not originate from actual observations.

There are generally accepted models of atomic structure, etc. that remain as theories. Unavoidably, unless there is fresh evidence to prove them wrong, such building blocks are the best we can do for a common language.

The nature of light –
and the rest of the electromagnetic spectrum

The fact that light millions of light years away can be observed and measured makes it clear we are dealing with scales minuscule beyond imagination. Therefore, until actual calculations are performed, we need to ignore scale. Theoretically, for instance, every particle in the universe is gravitationally attracted to every other particle.

Photons are not required to explain the behavior of light.

A rigid rod is used to connect a rotary crankshaft to a reciprocating piston. If you had a crank of low enough friction, carrying a suitable flywheel, you could transmit rotary power by means of an elastic cord.

This would require that the frequency and phase of the oscillations on the cord were nearly identical to that of the flywheel. The closer the frequencies and phases were, and the lower the friction of the flywheel bearings, the less the transferred energy required to maintain rotation.

Energy could be transferred through free space by the varying distance of an electron rotating about an atom – the electrostatic field being the elastic connection. This electron would have a greater affect on the electrons of a nearby atom while on the near side of its nucleus than it would while on the distant side. Like gravity, although tiny beyond measure and imagination, the effect would still theoretically be there at any distance.

The transfer of energy would be optimized by connecting it to an output of identical frequency and phase. In a frictionless elastic system there would be no energy changed unless either the distance were changing between them (as in an object falling and getting closer to the Earth), or if there was a change in the velocity of one of the electrons, such as when an electron changes its orbit.

It is commonly accepted that a photon is emitted when an electron drops to a lower orbit (valance) releasing energy from its previous momentum. It is likewise accepted that when a photon is absorbed, an electron is boosted to a higher orbit. In either of these cases, both the rotational frequency and the velocity of the electron involved is changed, resulting in a change in the pattern of its electrostatic field (relative to an external observer).

The point of all this, is that any such change momentarily affects the electrostatic field of an electron, as perceived by a distant object – without requiring a photon to do so. ***Variations in electrostatic waves can transfer energy – without the help of theoretical photons.***

So how does this apply to various experiments claiming to demonstrate the existence of photons?

If light is purely a wave, then why can individual photons can be detected? Puzzling results have been obtained in **Thomas Young's "double slit" experiment**, where individual photons can be counted, even as they accumulated in a wave-like pattern

The answer lies on the receiving end. In a mass of atoms with random orbits, some are more likely to be both aligned and in phase with an incoming wave front than others. Beyond that, thermal activity would have some of the atoms closer to quantum energy transitions than others. The arrival of a weak wave front that is strong enough to manifest at all, would trip the most coincidentally favored targets. As energy from the wave is absorbed in this process, it would become less likely to activate other targets. ***This is how a barely-detectable wave source can appear to be a series of particles.***

The above explanation of how a wave can produce a particle-like effect is not diminished by the fact that particles – such as electrons, atoms, and even molecules – can also produce wave-like patterns.

To me, the obvious scientific challenge in this would be to discover *why* particles can produce wave-like patterns. This wavelike behavior of known particles is actually a different mystery in itself. Find out why, prove it, and verify your theory with demonstrable predictions!

I don't profess to know this one, and I don't currently see it as explaining the behavior of massless photons, but I can't resist offering a couple of possible answers. For one thing, since all mass both produces and responds to gravity, all mass involves a field of some kind. My current belief is that these fields are related to the electrostatic properties of electrons and protons, but I won't attempt to support that – just yet. So, as a particle approaches the slits, so does its field. The particle then interacts with the part of its own field that passes through the slit on the other side – simulating a field-based phenomenon. A different possible explanation would be that other fields – whether inherent in the source of the particles, or sources of radio frequency interference – modulate the stream of particles to produce the wave effects. Again, understand that I'm not really invested in either of these.

Another particle-like behavior of light is demonstrated by **Crookes' radiometer**. This is where things get really interesting. This apparatus consists of typically four vanes radiating outwards from a very low-friction bearing in the center. Each of these vanes is shiny on one side, and flat black on the other. When light shines on it, it rotates – apparently revealing some kind of pressure applied by the light.

One thing that has puzzled me about this device is that the direction of the spin was such that the light was applying pressure on the black side, rather than the shiny side. I would have suspected that all those photons ricocheting off the shiny surface would have caused more pressure than they would if they were simply absorbed into the black side to increase its heat, instead of applying pressure – but apparently not.

Assuming again a target of atoms who's electrons are in constantly changing random positions, being impacted by a sequence of waves. Some of those electrons which were traveling precisely in the same direction as the wave front may be accelerated to a higher band. This externally-originated acceleration would of course take place in the direction away from the source of the waves. The result would be a greater centrifugal force for the following half-revolution than that of the previous half-revolution. The centrifugal force of is half-cycle of increased speed would tend to pull the atom in the same direction as the advancing waves. Again: **The period in which the rotational speed is changing would only exist**

for *part* of a cycle, thus providing a brief imbalance of centrifugal force, away from the wave front.

Why do hot atoms have more mass than cold atoms?

The amount of energy required to heat one liter of water from freezing to boiling would be equivalent to approximately 4E10-12 kg of mass. So if we tried to say that this liter of water did not take on weight, we would then have to explain where else this mass might be stored. We can understand thermal energy in terms of molecules traveling at higher speeds, but what about individual atoms?

Mass is related to inertia. Therefore an atom who's electrons are in a higher energy state and thereby moving faster (whether by heating, mechanical stress, or any other means) would be more resistant to changes in direction or speed – AKA more mass. This higher energy state would not necessarily mean a change of valance for the individual electrons, as all electron shells would be somewhat uniformly affected (until a state of plasma occurred).

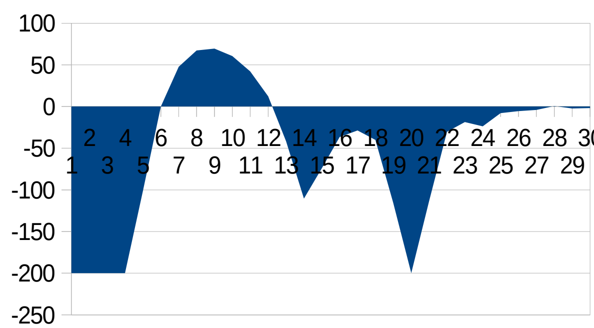
Since gravity and mass are directly proportional, we might expect that the mechanism that changes mass in atoms, to be the same thing that changes their susceptibility to gravity. It is my opinion – indeed, my assertion – that science in general is overlooking a relatively simple principle in its search for an explanation of gravity.

Why do atoms bond into molecules without crashing into each other?

For my approach to this one, I chose the simplest model I could think of:

1. Picture two hydrogen atoms with their electrons rotating in the same plane.
2. Let's define the distance between a proton and its electron as 1.
3. The electrostatic field strength at this distance is also defined as 1.
4. There are at least three cases in which these field strengths would apply.
    1. Positive forces attracting electrons to the protons in the nearby atoms
    2. Negative forces between the electrons of nearby atoms
    3. Negative forces between the protons of nearby atoms

My next step was to sum the forces for the three cases above at a series of distances between the protons, as the electrons made complete revolutions around their respective nuclei.

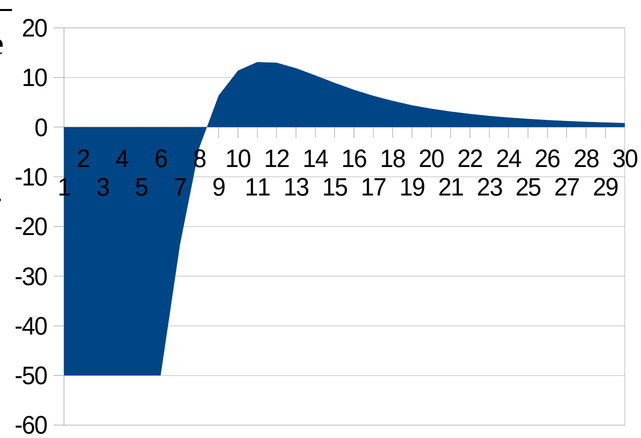


This graph shows the sum of all of three forces mentioned above for the electrons in-phase, 90 degrees out of phase, and 180 degrees out of phase.

The units on the X axis actually represent tenths of the radius of an electron's orbit. So the maximum distance involved here between the nuclei is 3 radii, or 1-1/2 diameters of the atoms.

As you can see, there is a sweet spot between about 0.6 and 1.2 radii where the attraction between the two atoms is positive – all other positions repel each other.

Obviously my limited number of data points create a very sketchy picture. But to the degree that I have calculated and plotted it, the pattern makes sense – and is consistent with observation: Bonding would take place, but not collision.



As seen above, the sum of these plots represents a repelling effect for all positions beyond this sweet spot. However, in the case where the electrons are in phase, the forces for the more distant positions remain forever

positive.
This might work for a theory of gravity if the universe were two dimensional, and all the electrons rotated in phase.
Since electrons repel each other, there would be a tendency for them to fall into phase as atoms came closer together. This effect would diminish rapidly with distance, but like gravity, would theoretically maintain some influence throughout the universe.

We can explain gravity in terms of electrostatic forces

We have just pointed out that electrons influencing each other would tend to nudge them into phase, so now consider what happens when the two electrons are in phase: As one approaches the nucleus of the other atom, it would speed up, only to slow down as it began to recede towards the other side of its own nucleus.
This imbalance in orbital speed would translate directly into an imbalance of centrifugal force. This in turn would lead the atom in the direction of the nucleus of the other atom, until the opposing forces of the positive nuclei halted the progress. (Note here that since the electrons are in phase this case, the distance between them would remain constant.)
The two plots above deal only with summations of electrostatic forces. Gravity on the other hand, is explained by unbalanced orbital velocities of the electrons of their respective atoms. Did you get that? I have just explained gravity. Now prove me wrong.
Let's play with this one a little bit: You have a ball on a string, and you are swinging it in a vertical arc at a velocity that is barely enough to keep the string straight at the top of the arc. A moment later as the ball nears the bottom, would the tension on the string equal the one g of gravity plus the one g of centrifugal force that was just enough to counter gravity at the top of the arc?
Before we get too excited here and start wondering if this vertically rotating system would actually weigh more than it would if not rotating, keep in mind that the downward half of this arc will not last as long as the upper half. Since no energy is extracted with the center being essentially stationary, the integral of the vertical tension on the string would have to equal zero (keep in mind that the string is pulling upwards for part of the rotation).
The fun begins when we extract energy from this orbit by lengthening it slightly. This would slow down the velocity of the ball, and not leave it with enough energy to return to the top. To explore this one further, we need a different model – one to which we can add energy.

Newton said that an object at rest will remain at rest, unless acted upon by an outside force. He was wrong, and my friends Dum and Dee proved it to me.
Dum and Dee were playing tether ball. These guys were not wimps toying with an ordinary lightweight ball on a rope attached to a pole between them. They had demolished Wilson, and replaced him with a twenty-five pound medicine ball. As this ball swung back and forth, the speed of the ball remained constant during each arc, and the amount of energy imparted by one of the brutes equaled the amount received by the other.
The unusual thing about this tether ball was that it was mounted on a raft that was still tied to shore. During this game, Dum and Dee longingly considered the case of beer they spotted on the opposite side of the pond. When they untied the raft, they received a happy surprise: Now each time one hit the ball, it slowed down before reaching the other. This was because the centrifugal force of the ball had pulled the raft slightly in the desired direction, imparting some of the inertia of the ball into the motion of the raft."
Dum realized something: "I bet if we built a shed over us we would still move."
"I bet if we got this thing going fast enough and put it into a tin can we could make a space ship," said Dee.
The ramifications of all this are mind boggling. Are you going to make the blind faith assumption that

this cannot all be true, or actually do the math like I did and find out? Either way, I challenge you to prove me wrong.

There are at least a couple of examples of this principle that most of us have experienced at some time in our lives.

1. As a child I was puzzled at how swinging your feet on a swing caused you to go higher and higher. I actually did an experiment where I started from a dead stop, and began swinging my feet in phase with the pendulum I was creating. Without pushing on the ground or any other object I was soon able to develop momentum with the centrifugal force of my feet and legs alone. All this had been instinctive before I had consciously tried it.
2. Have you ever been off balance and found yourself wildly swinging your arms? Why would you do such a ridiculous-looking thing? But think about it – and better yet, try it on purpose. Your hands are moving at their maximum distance from your center of gravity, and at their maximum velocity, in the direction you’d rather be going.

So now you can go out and build a machine that varies the rotational speed of a mass, include an on-board source of energy, seal the whole thing in a tin can or a space ship, and do things you've never imagined before. This device will apply force in the direction of your choosing whether it is on land, in the air, underwater, or outer space.

While you're attempting to prove me wrong on this one, remember that this only works if the rotating mass and the platform is allowed to accelerate in the direction of the higher-velocity portion of the orbit.

There may be many additional questions related to systems such as this, but here's a few to consider.

1. If you allow this system to accelerate in the favored direction, the orbit in that direction effectively lengthens and the orbiting mass wants to slow down. Don’t fret: Energy is being extracted from the orbit to provide forward inertia to the whole system. That’s what your on-board energy source is for; acceleration takes energy. The equation will balance.
2. What about a mass that simply rotates back and forth in a single direction without doing a complete circle? Of course it would work – as long as you're not still tied to the dock.
3. What about canceling out torque and vibration so the astronauts are not rattled to death? There are likely many ways to deal with this, and I've already thought of a couple of them (I do have a few secrets). If you’re smart enough to understand what I’ve shared so far, you may be smart enough to figure it out.
4. In dealing with attractive forces rather than a fixed string, you are dealing with an elastic connection. What would this change? Probably nothing. If the system moves, energy is extracted from the orbit.
5. How is energy restored to atoms that have yielded energy? Other than seeking equilibrium with the surrounding atoms, it probably isn’t. Things cool down as energy is expended.

For a little review, let’s revisit our gravity model set forth above. The nucleus attracting the electron of a nearby atom would also cause it to vary the velocity of its orbit. This would increase the force of its atom towards the nucleus that has its attention. There is a subtle difference in this force however. Whereas the electron is being attracted directly, the imbalance of the electron’s orbit is causing the atom to drive itself in that same direction. This more closely explains what is interpreted as a “warping” of the universe in the presence of gravity.

Conversely, accelerating an atom is going to create an imbalance in an electron’s orbit that would tend to resist acceleration. So, this phenomenon contributes to an atom’s mass, as well as its gravitational attraction (while the accelerating is taking place). The energy applied to accelerating this atom is stored as kinetic energy in it’s velocity, relative to the position from which it was accelerated. So this gives us relative mass (or total energy) as a function of velocity, relative to the point from which the acceleration began.

A little about magnetism

What would it take to create an atom capable of being magnetized? I would suggest that at least a couple of the electrons would need to stack up on one side, exposing a less intense negative field on the other. If this were the case, then similar atoms would tend to align, with their more negative sides (the stacked electrons) pointing towards the less negative sides of other atoms. Here again, this would result in electrons rotating at varying speeds, causing a pull on their respective atoms. I have been told that iron has exactly this property.

Another bright idea

It appears that a truce has gradually settled over the wave-vs-particle theory of light, but I'm still not convinced.

I have a calculation in mind that could shed some light on this (forgive me) that may or may not have been tried – so here's the premise:

We have discovered a cache of grenades, that we know nothing about.

(1) We would like to know if they do damage by pure concussion, or by driving particles of metal (wave versus photons).

In either case, we will assume the weapon radiates in a uniform spherical pattern

(2) If metal:

(a) What's the total number of particles it contains?

(b) Would this number be consistent with the damage previous detonations have produced?

We set up the grenade on a pedestal for detonation, plus a target of known size and distance to register fragments. Whether or not the target has been violated would answer the first question. The total number of particles could could be calculated from the density of the marks on the target of known size and distance from the grenade.

So we step into the observatory and train our instruments upon Polaris. Polaris has a magnitude of about 2.2 (reasonably visible to the naked eye) and hangs out there at about 430 light years from Earth (the calculation scales are about to get absurd, but stay with me). Our tools include a cell of known area that can count individual photons, or conversely, the pressure a wave front has imposed from a unit of area of this star per unit of time.

Now to analyze the data: Could the density of photons on the surface of this 860 light year diameter sphere be accounted for by the possible number of atoms on the surface of Polaris that could be simultaneously radiating (give or take an order of magnitude or two)?

If yes, then particle theory might survive; if no, then we're only being waved at.

The good news is the data is all currently available; all we need now is the arithmetic.

OK, so let's play with this one a little:

Polaris (the north star) hangs out there at about 430 light years. One light year = 5.88 x 10^12 miles. So our distance to Polaris would be 430*(5.88*10^12) = 2.53*10^15 miles.

Polaris has a diameter of about 2.32 times that of our sun. This gives it a radius of about 1,000,000 miles.

On Polaris, one meter on earth would represent one meter times the radius of Polaris, divided by the distance from earth. So this would be 1*10^6 miles/2.53*10^15 miles – which = 3.95*10^-10 meters on the surface of Polaris. Let's round this number off to 4*10^-10 meters, or 4 Ångstroms.

So the question now becomes:

Could the rate of "photons" measured in one square meter on Earth, be accounted for by what could be radiated by a 4 Ångstrom square on Polaris?

The diameter of an unbonded hydrogen atom is 106 pico-meters, or 1.06 angstroms. This would allow only 14 hydrogen atoms on the surface of Polaris to produce all the photons captured by a one square meter target on Earth. Could this be done?

More Light

Light had long been known to have wavelike properties, so it was assumed that there had to be some medium to allow it to propagate. This theoretical substance was referred to as “luminiferous aether.”

During the 19th century it was found that the speed of light was optimized by a pure vacuum, and was unaffected by the direction it was traveling. Therefore it has been assumed that besides wavelike properties, light must also consist of particles. So a massless particle (a boson) called a “photon” was theorized to explain how the speed of light could be optimized by an absolute vacuum. So here we have a problem: Waves require a medium, but a medium impedes particles.

Waves in the ocean are virtually frictionless as they travel. Energy from winds or moving objects set masses of water into motion. These form waves that propagate indefinitely until their energy dissipates over ever-increasing area, or is consumed by a shoreline or other obstacles. A different form of propagation takes place as sound travels in all directions through water (as opposed to only near the surface). These travel in all directions, but are likewise almost frictionless as a slightly elastic material provides instant rebound for the next approaching wave.

Sound striking a sheet of plywood propagates through the wood. That which is not absorbed, recreates sound waves into the air on the opposite side. It is interesting that the speed of sound is enhanced by the rigid structure of the wood, and will arrive at the other side of the wood before the waves bypassing the wood through the air. Another consideration is that an object striking one side of a sheet of plywood will create sound waves on the other side. It would be impossible to tell from the sound waves alone whether the sound on the output was caused by waves striking the input side, or by some other impulse. This tells us that any form of mechanical input on one side, is converted to a sound wave on the other.

Now it gets spooky – The above discussion compounds our problem with the wave nature of light – most obviously, why does the speed of light slow down when it passes through a transparent medium? Well it doesn’t!

In most substances light is either absorbed as heat or chemical change, or is reflected. It is usually some combination of both. But the interactions of the atoms or compounds of transparent substances resist both adsorption and reflection.

The remaining option (for the conservation of light energy) is to convert light into waves that will propagate through the medium. Evidence has indeed demonstrated that these waves travel at less than the speed of light – even as ocean waves travel slower than the winds that create them. When light-created waves reach the other side, they are reconverted to create light that can travel onwards – even as energy from the initiating winds is extracted from ocean waves when they are absorbed by stationary objects. There is additional proof of the ability of materials to create light through the property of triboluminescence. Even as sound waves can be created on the output side of a piece of plywood through either impact or sound waves, light output from some materials can result from either mechanical or radiation input (consider also electrical or chemical stimulus).

How are light waves formed? So what is light?

An observer standing near an atom would be subjected to variations in an electrostatic field as electrons whizzed past. There would be peaks of negative when an electron was near, and positive influence at times when the nucleus was more exposed. These variations may be neither waves nor particles, and yet there would be very real variations in electrostatic force and polarity.

Unless an atom is either receiving or yielding external energy, these forces affect little besides an atom’s position among other atoms. If disturbed by external forces of radiation, heat, mechanical or chemical interactions however, it could release this energy through some form of radiation or stress, as it struggled to return to an equilibrium with its environment.