

The Quantum Medium View: The Last Chapter in a 150-Year Story

For more than a century, physics wrestled with the mystery of how light moves through space. Around 1900, most aether ideas were set aside, and theory based on *the measured* light-speed, c , (lsc) postulate, elegantly organized observations. But it left open the question of what physical system is causing the observations.

The Quantum Medium View (QMV) finally answers this huge question. The primary reason that the aether of the 1800s did not succeed is that the logical consequences of a medium that propagates energy (e.g. photons) through it were not understood. Even today, few understand these complex consequences of a quantum medium (qm).

These consequences will now be explained. Every time a system (S) of mass-energy (m-e) (at all scales) has its **absolute velocity** (v_{Sa}) *through the qm* changed, the velocities, v , of all the energy quanta *moving within system S* change *relative to the system*, and the changes for all the photons are different and depend on each photon's location and direction of motion within system S. This anisotropic changing of all the energy *moving within system S* has huge and cascading effects that result in a "catalogue" of relativity-related phenomena.

A primary effect is that the rates of energy exchange between any two points in the system are different after the system's velocity change through the qm. For example, the *speed* of energy exchange is *decreased the most* in the direction of increased v_{Sa} , and the speed is *increased the most* in the opposite direction. What is crucial to grasp is that *every m-e system must constantly adjust its m-e configuration* to maintain an isotropic rate of round-trip (RT) energy exchange within S *to maintain its stability* as it would be were S at rest in the qm. For this reason, every m-e system, which is always having its v_{Sa} through the qm changed (for obvious reasons) is constantly *adjusting its shape* to preserve its essential isotropic rate of RT energy exchanging.

Stable matter *proves* that its RT energy exchanging is isotropic. Without isotropy, atoms and molecules would disintegrate, and the universe we observe could not exist. The question is not whether isotropy happens (we know it does) but what causes it? *The logical consequences of the qm provide the only known explanation for the RT energy exchanging isotropy.* Due to this fact, the chance of our universe containing an energy-propagating qm is **very high** (as Dirac anticipated). Matter as we know it could not exist without it. Because this isotropy must be maintained, the shapes of all m-e systems are continually changing in the qm as their v_{Sa} velocity changes.

What is very important is that all these physical changes in a system's shape and rate of time, that occur when the system's v_{Sa} changes, are specified by a very simple *dimensionless* ratio: $rv = \sqrt{1 - v_{Sa}^2}$. This ratio specifies time, distance, and mass changes in S *relative to what they would be when S is at rest in the qm*. And another change in the system, the asynchronization of the clocks in S, is specified by a simple rule. Thus, we can easily know the changes in any m-e system when we know its v_{Sa} . Note: In the QMV theory, distances are always in light seconds (LS), not m. Thus, 1 LS = c absolute meters, ma (measured in qm). And v_{Sa} is always less than 1.

The amazing *observed* slowing of moving clocks (and other evolving systems), and the *observed* foreshortening of moving m-e systems, and the *observed* increase in mass of a system moving relative to an observer, all *also depend on the observer's motion* through the qm and the resulting changes in the *observer's* system.

Gravity in the QMV is similarly understood via a very simple and logical QMV model that accurately predicts gravitational phenomena. In the QMV, gravity is not a force from outside system S. Rather, it is that large masses create significant gradients of energy transfer slowing in the qm around them. And the gradients are specified by another simple ratio: $rg = 1/(1 + (m \cdot G/\ell))$ where distance ℓ is in LS and Newton's gravitational constant, G , is therefore $2.47e-36$. This is very strong evidence that the QMV model of gravity is consistent with nature. The model accurately predicts the carefully measured bending of light paths passing near the sun and it accurately predicts the known precessions of the orbits of all the sun's planets and other known bodies orbiting the sun.

Over many years of searching for a flaw in the QMV, none have been found, and the QMV exposes and explains the flaws in theory based on lsc, including the theory's paradoxes and its lsc premise. The QMV also explains far more phenomena than lsc theory (e.g. the inertia of m-e, Doppler energy shifting, centrifugal forces, and how light moves through space). And it is consistent with classical physics and is a major simplification of physics theory.

The above information is explained far more thoroughly in other QMV documents. Perhaps the single, most compelling evidence that QMV theory is correct is that it shows in detail why (regardless of a system's v_{Sa} and all the possible variations of measured light paths within a system S) *the calculated speed of light along all the paths will always be the infamous, and once mysterious, light speed, c*. The "must read" URL with the math that shows exactly why lsc occurs and caused the incorrect lsc physics law is at: www.qmview.net/QMV-Math.pdf

The QMV is both provable and falsifiable via a space-based experiment that can also determine the direction and magnitude of the sun's v_{Sa} . The experiment is described in detail at: www.qmview.net/QMV-vSa-Experiment.pdf