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<http://science.trigonamedia.com/geocolor>

*Ask a child the colors of a rainbow or emerging from a prism, and it will name the primary colors. This is what we call "selective color empathy": the spectrum of light is not perceived smoothly, but certain colors seem to stand out for no obvious reason. These are the colors you first learned as a kid. The fact that other colors are often named after them, but never the way around, by itself proves they are special.*

*Why are these colors found to be unique? Is there a physical or physiological basis for such divisions of the visible spectrum, or is it just our "subjective" perception? In that case, why are the primary colors always the same, worldwide and throughout history?*

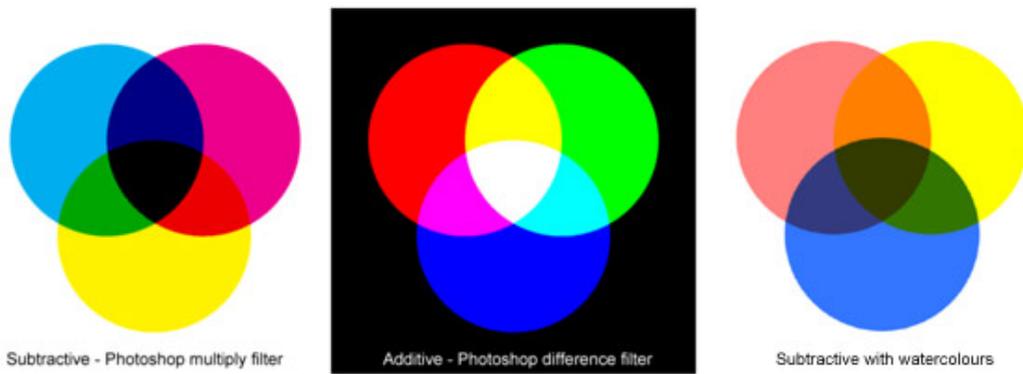
*Is there a universal, but hidden pattern which guides our conscious experience?*

*The "geometric origin of selective color empathy" is a proof of such a concept, a new approach which could be called the physics of conscious experience. It formulates a distinct division of the visible spectrum accurately accounting for the wavelengths of the primary colors, and more. As it provides clues for an extended type of underlying wave physics, it can be a great incentive for further research.*

### **The primary colors: subjective experience and practical applications**

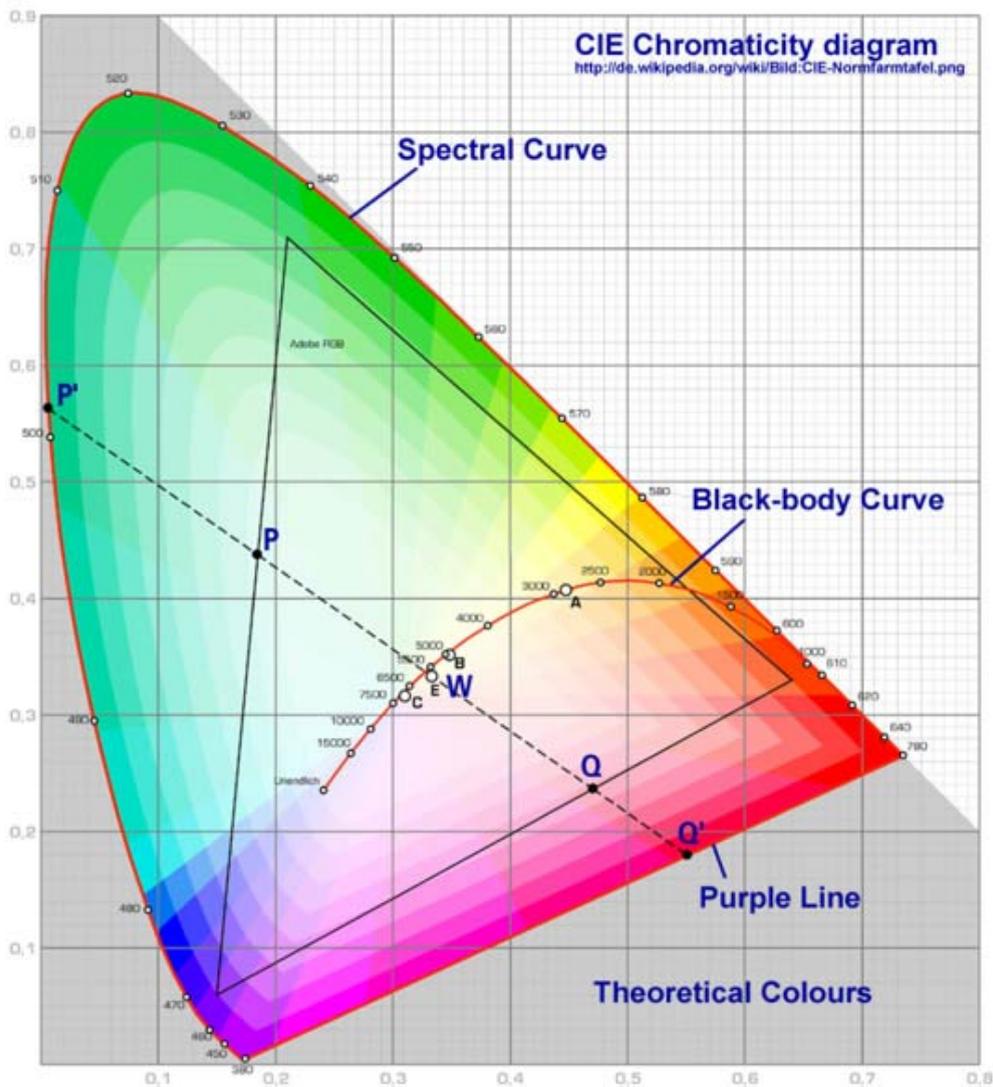
Isaac Newton, when he witnessed how white sunlight was split up in its composite fractions, was apparently well aware of the fact that actual color creation only takes place in the brain. Hence, selective perception of the primary color could essentially be attributed to the brain as well. Later, physicists discovered the (electro-magnetic) wave nature of light, and soon enough the wavelengths corresponding to the primary colors were agreed upon and became established.

Yet, the selective perception of primary colors as such remained an entirely subjective phenomenon. The wavelengths, for example like they are produced by a prism form a smooth gradient, so there seemed little incentive to even suspect a relevant physical basis for any discrete division of the visible spectrum.



Nevertheless, there are practical applications which we all know in daily life. There are different forms of color mixing: "subtractive" used for printing (i.e. on a white surface), "additive" e.g. for color tv's or computer monitors (on a black surface) and artistic mixing. All spectral colors (plus purple) can thus be created, and by adding black or white also all saturations and luminosities. If you use a magnifying glass to look at the image in the centre, you can clearly discern the RGB pixels at work in additive mixing on your screen in real time!

Although this confirms the uniqueness of the primary colors in a practical sense, it still does not explain a specific physics principle causing these colors to stand out. They still seem to be just wavelengths like any other..



The officially agreed wavelengths of the primary colors in the so called chromaticity

diagram, showing all mixing modes in this case to create all hues and luminosities.

### **The wave matrix physiology of conscious perception: a possible physical cause of selective color empathy.**

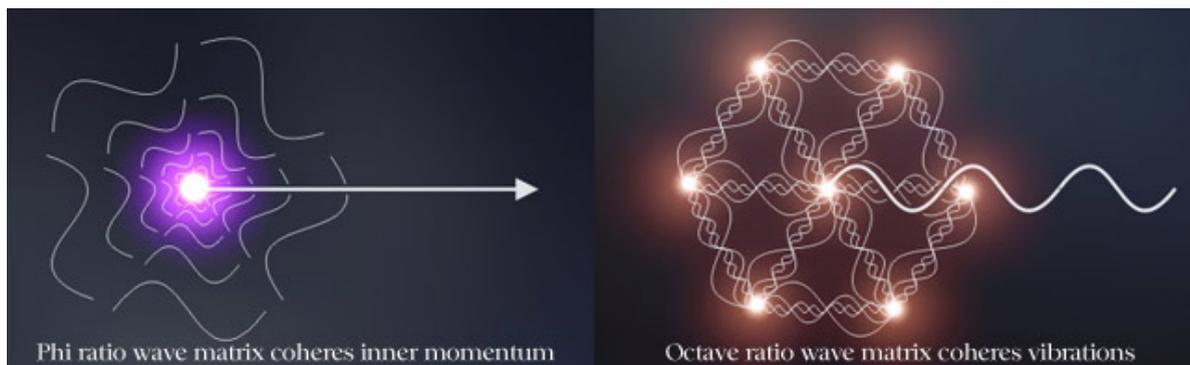
Waves not only have a vibrational quality (frequency), they also have another aspect, which is their internal momentum. This is very well known in mathematical physics, but is heavily ignored as it was never considered to be of practical consequence.

Unlike in physics, for biology (not as a subject but actual organic life) and life in general this internal momentum of waves is crucially important.

Now, depending on the type of interaction with other waves, either the vibrational quality or the inner momentum of a single wave is emphasized. These "other waves" in that case form a coherent set which is referred to as a wave matrix in 3 dimensions. A somewhat deeper approach is, that a coherent wave matrix can represent (or, in a way, produce) either the vibrational aspect, or the inner momentum of a single wave, or both.

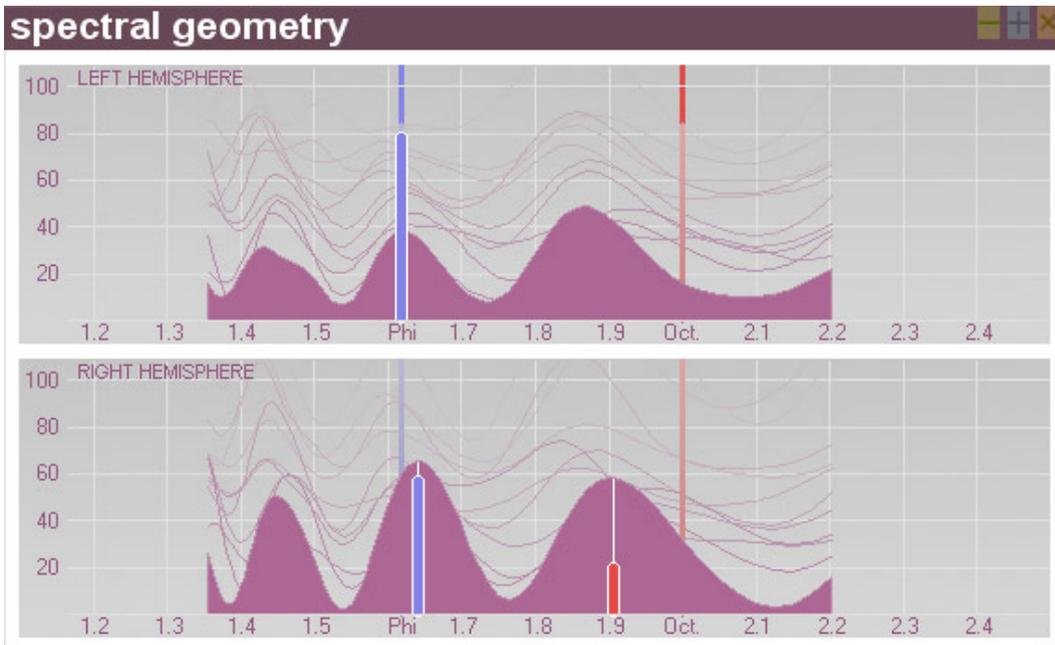
The specialty is, as currently the actual physics of inner wave momentum is still little understood and a subject of research, it can alternatively be referred to *indirectly* by means of the (normal) frequency physics of the wave matrix it is part of.

In particular it was found (and can mathematically be proven) that a wave matrix based on *octave ratios* between wave lengths, can equivalently express the *vibrational* aspect of a single wave. Likewise, if a wave matrix is based on *Golden Mean (Phi-)* ratios it represents the *internal momentum* of a single wave:



Translated (approximately) to how the brain functions during perception, this could be referred to as *wave matrix physiology*. The deeper understanding is, that wave matrix physics is the generic cause of conscious perception, as afterall the brain, and the whole body are themselves but a creation of that same perception.

In wave matrix physiology, the vibrational aspect of a wave is associated with the conventional (physics) representation of a wave, as it is captured by our organic senses. The somewhat mysterious inner momentum is associated with the actual perception of that wave, roughly speaking, in the brain. Afterall, we don't literally see or hear waves themselves, but actual colors or sound.

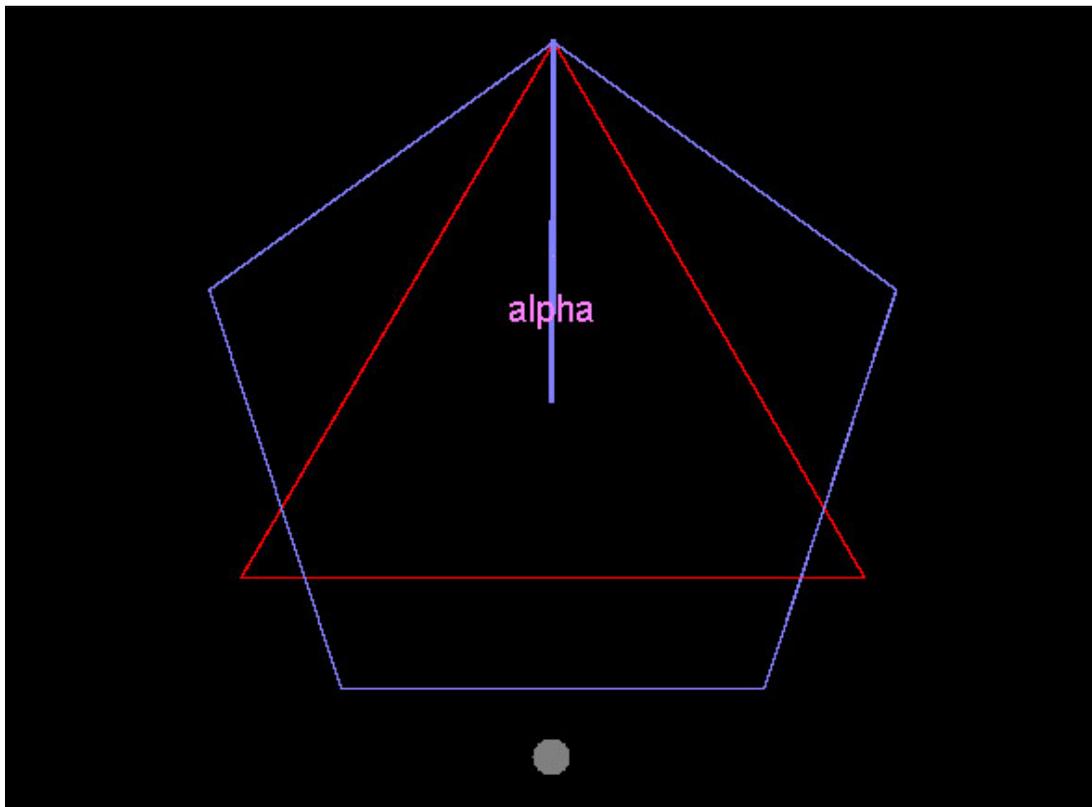


The [NeuroGem](#) elegantly measures spectral geometry in the EEG and detects Golden Mean or Octave coherence, while offering a variety of diagnostics and training options

Now, the octave resp. Golden Mean wave matrix configurations in 3 dimensions are conveniently modelled by the regular polyhedrons, that is, the platonic bodies. The cube (or tetrahedron, used in below animation) represents the octave wave matrix whereas the dodecahedron represents the Golden Mean matrix.

It was then discovered that the all-over wave matrix physiology of conscious perception is represented by the geometric interaction between these two constellations, called "interdigitation". Below interactive animations show the basic principle and how this finally results in the accurate prediction of the primary colors.

### **3-D interactive animations showing the geometric origin of selective color empathy**



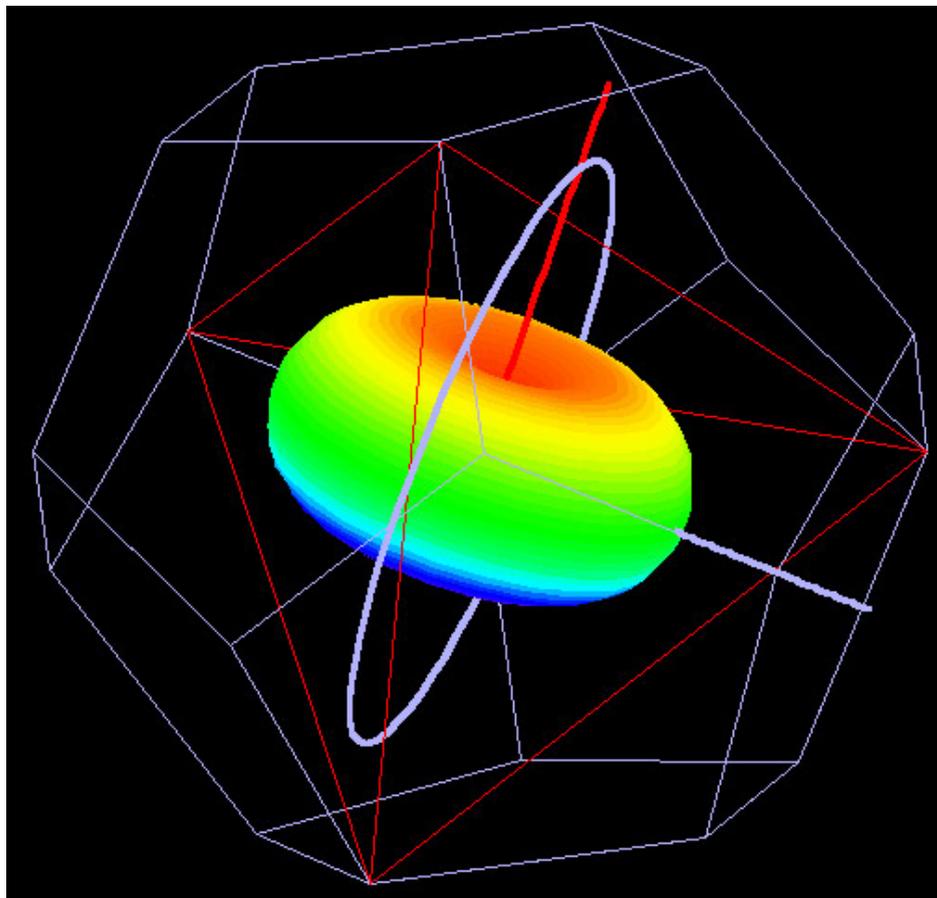
[ONLINE VERSION ONLY]

Drag the grey dot horizontally to control the animation

**Note: in order to view the animations, you may need to "allow blocked contents" in your browser, depending on th ActiveX security settings. Further animation instructions, and browser settings [here](#).**

Geometric interdigitation: first an example in 2-D to demonstrate how co-inciding vertice pairs of two geometric bodies define principal differential angles, created from the combined geometries. In this 2-D example, not all vertice pairs are matching at a time (in fact only one) simply because that would not create interesting new angles.

In real life 3-D, the play of geometric angles is a bit more intricate, and is now demonstrated to accurately predict the perceived divisions in the visible spectrum:



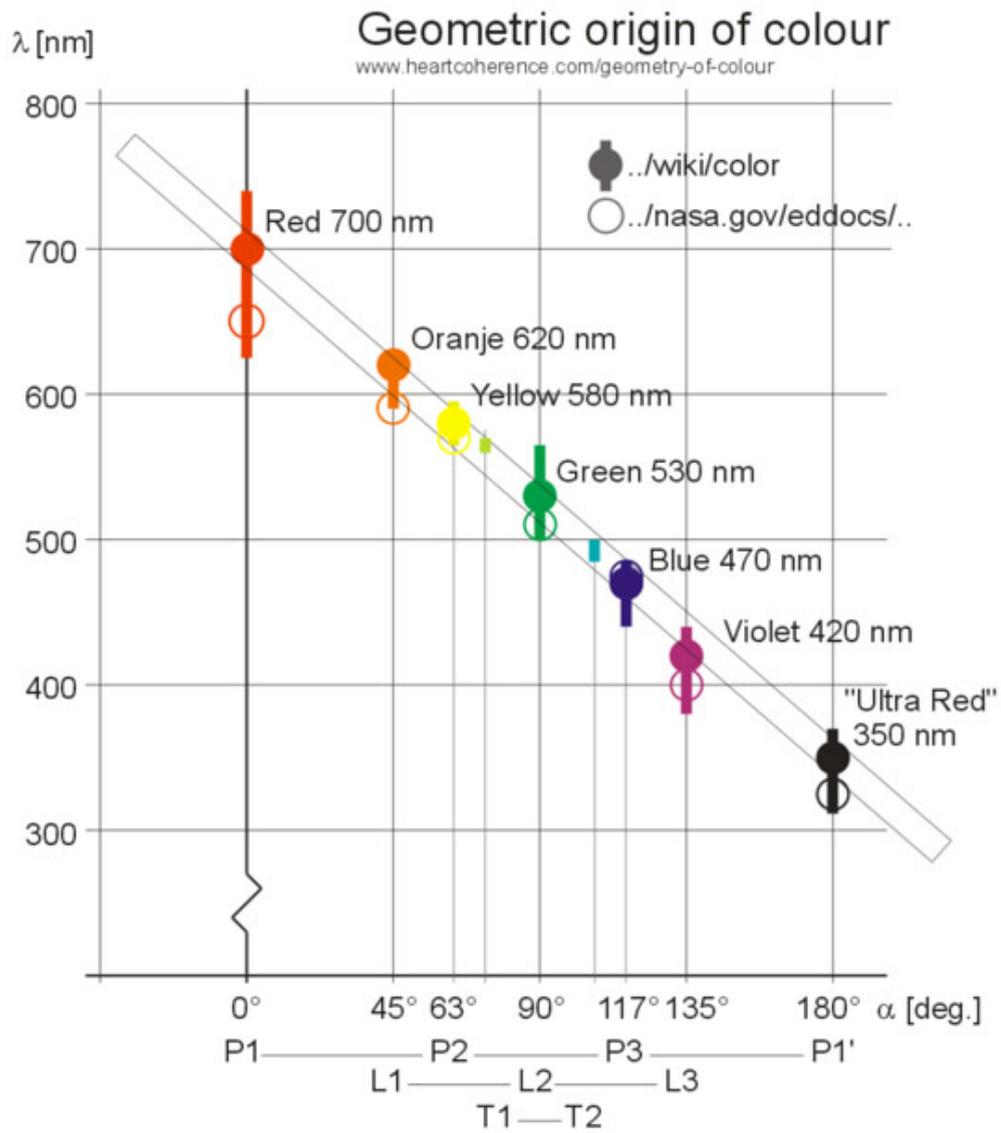
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**Double-click to start / stop the animation;  
drag l-r using right mouse button to set differential angle**

Geometric interdigitation in three dimensions: this is the geometric "machine" creating the wavelengths of all the primary colors. Like in the 2-D example, the angle is between the red and blue main axes is determined, in this case predicting the accurate wavelengths. The donut shaped "photon" is drawn inside only to directly visualize how the differential angle (indicated by the blue arrow, as the red one is always zero) indicates a spectrum color. The auto-rotation takes the animation through the differential angles, it has no physical meaning.

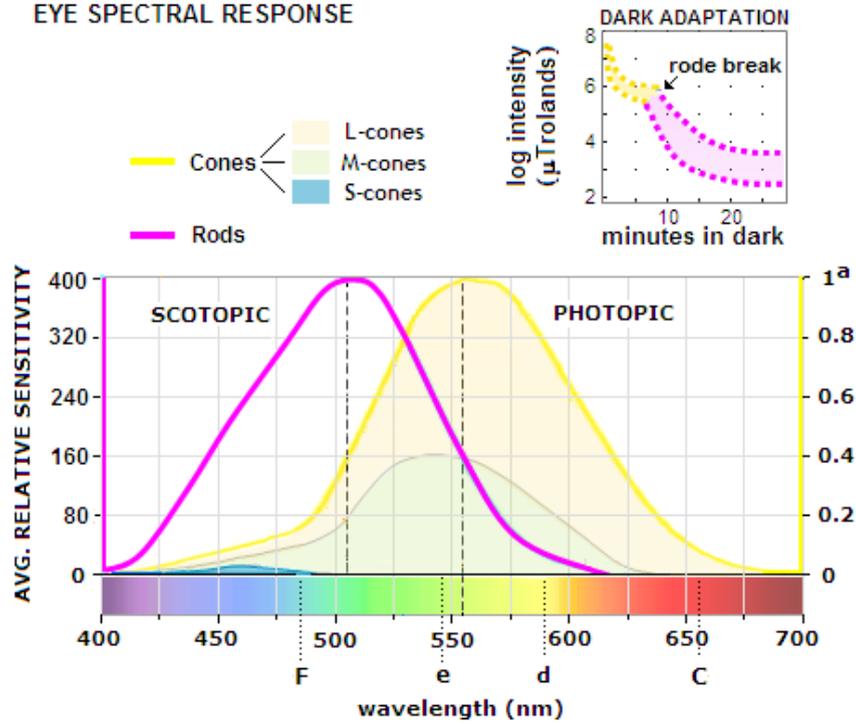
In terms of real physics, in fact two interacting toroidal topologies are proposed, interacting at under a certain coupling angle to produce a net energy corresponding with a specific wavelength. The second torus is only shown as a circle, to keep the animation simple.

The resulting angle vs. wavelength diagram is shown below:



Mapping the geometric angles with the wavelengths of the primary colors creates a simple straight line: proof of concept!

## EYE SPECTRAL RESPONSE

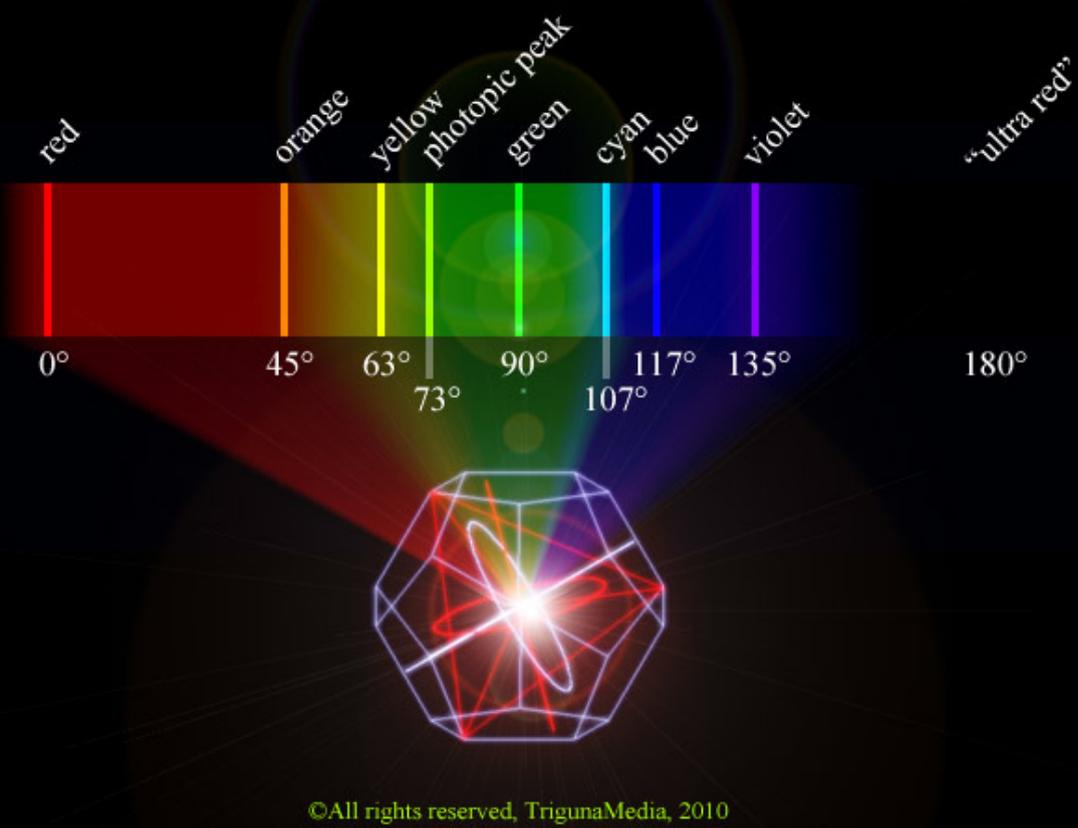


An amazing bonus and further proof: one color designated by the geometric color formula is generally not perceived to be in any way specific. But does it? This spectral color, yellowish green, turned out to accurately match the "photopic" sensitivity peak of the retina. The official wavelength is 555 nm, the geometric color formula produced 556 nm - just a fraction of a percent off the mark!

*This is what they use the  
photopic peak color for!*

By way of a rough analogy, it could be said that the series of primary colors (incl. photopic peak) constitutes the "emission spectrum" of the wave matrix physiology of conscious perception:

The geometric origin of the “emission spectrum” of conscious perception



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