

# Physics for the Rest of Us

## What are the big questions in physics?

Humans have been asking some of the same questions for eons. Such as:

- What is the nature of “stuff”?
- What makes everything the same or different?
- What is the nature of change and motion?

We have applied these questions to the study of the planet, to everything on the planet and to everything in the cosmos.

In ancient times, these questions were inseparable from philosophy. Today, specialized fields of study apply these questions to very narrow topics of interest. The study of “stuff” and what makes things the same or different eventually branched out into the disciplines of biology and chemistry. The inquiries into the source of change and motion have remained mostly mathematical and theoretical. This discipline does not deal so much with “stuff” as it investigates how that stuff moves and changes over time. This includes everything from cells to solar systems.

When we discovered how to generate electricity at will, the investigations into electromagnetism, or light, quickly followed. That spawned the science of quantum physics and the study of how light interacts with matter. This directly impacted biology and chemistry and revolutionized our ideas of what makes up “stuff”.

In many ways, it has also affected the study of cosmology. By using huge particle colliders, which smash the most miniscule parts of “stuff” into one another, we may be able to create a mini black hole or recreate the first moments of the Big Bang over and over again.

## What type of topics from quantum physics do you cover in *The Sage Age*?

For the most part, I cover the topics that are often alluded to in popular New Age literature and those ideas and experiments which formed the basis of our current philosophy, especially those which are used to bridge the gap between our rational and intuitive understandings.

Some of the topics are:

- The two-slit experiment—which demonstrates the dual wave/particle nature of light and how every “thing” must be seen both ways for a full understanding.
- Non-locality and entanglement—which Einstein called “spooky action at a distance.”
- The Uncertainty Principle—which demonstrates what we can and cannot know about a thing.
- Parallel universes—which may explain why the force of gravity is so weak in our universe and the function of both black and white holes.
- String Theory—which opened up a whole new way of modeling reality.
- Chaos Theory—which shows that living systems must be far from equilibrium to thrive and that there is a simple system at the heart of each complex system.
- The Zero Point Field—which is the baseline energy of the manifested universe.
- Information—which is now being considered as fundamental an element as energy.

All of the topics are discussed in layman’s terms along with analogies and illustrations that help the reader relate the information with something they experience directly in everyday life.

**You often refer to Plato's story of the cave in relation to the measurement problem in science. Why are those correlated?**

The story in Plato's *Republic* tells about folks who can only see the shadows of reality and they confuse them for real things. In science, if it can't be quantified and measured, it can't be studied. That is the limit of science, not the limit of reality. The experimentally proven theories of quantum physics have demonstrated that we may indeed only be measuring the shadows of reality and that there are more subtle layers of energy and information which guide the material realm. As technology advancements are made, we are beginning to have the ability to detect a little bit of information and energy from at least one of these subtle layers and, by doing so, we will be given the opportunity to update our philosophy to embrace this discovery.

It's important to remember that, philosophically speaking, the Western world is still operating from the paradigm laid out by Pythagoras. The shadows seem very real because we are able to do so much with the information gleaned from measuring them. This includes the advent of global wireless communication by the discovery of radio waves right through to the development of the mini-electronics inside a cell phone. It seems like we know what we are dealing with but, in fact, everything we "know" about electromagnetism and quantum processes is based on theory. History shows that these theories are constantly being updated and changed to accommodate new findings. It is time we replaced the models given by Pythagoras and others with new models and new thought that will bring a new paradigm of understanding.