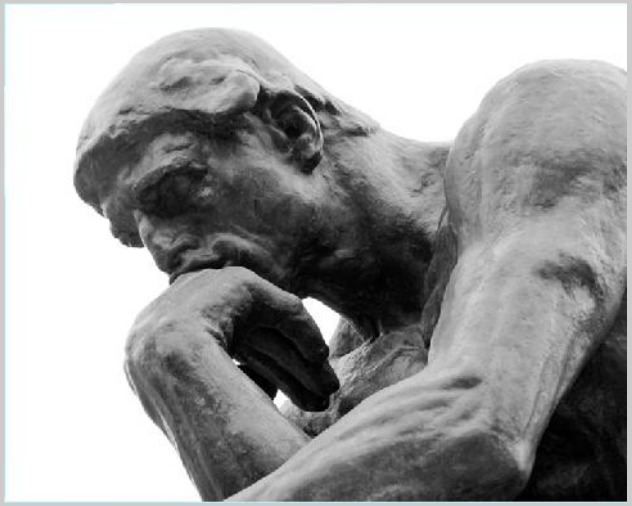
Quantum Physics and Spirituality

Are they actually related?

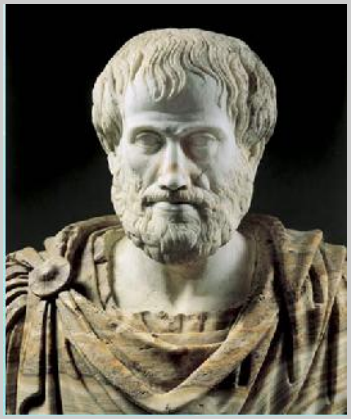
Based on the book "*Quantum Enigma: Physics Encounters Consciousness*", by Bruce Rosenblum and Fred Kuttner



What is the world made of?

What does it all mean?

Were do I fit in?

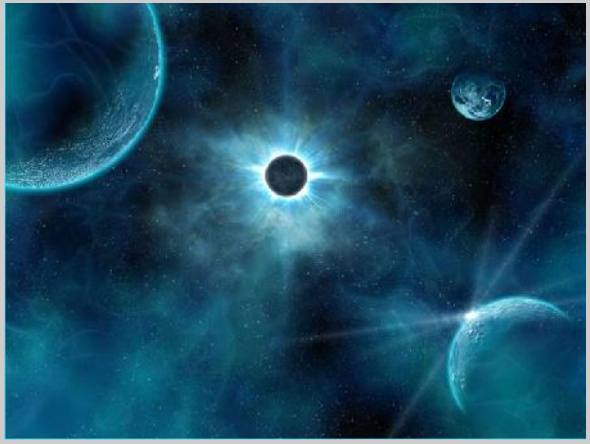


Aristotle (384 – 323 BCE)

The world is made of air, water, fire and earth and is located at the center of the universe

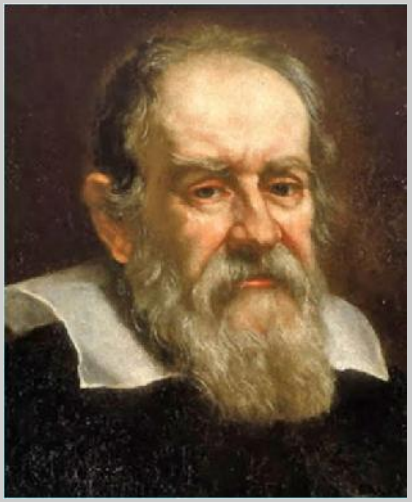
Things have a natural place to be

- A rock falls because it wants to be at its natural place: the center of the universe
- The heavier the rock the greater its desire to be at the center of the universe. Therefore, it falls faster

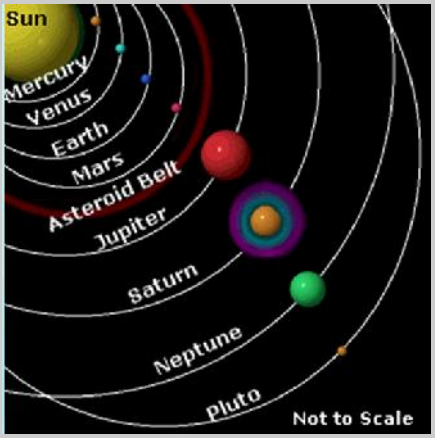


- The circle is the perfect shape. Heavenly bodies are circular and move in a circular orbit around the Earth
- Heavenly bodies are made of an incorruptible substance: the quintessence

Galileo Galilei (1564 – 1642)



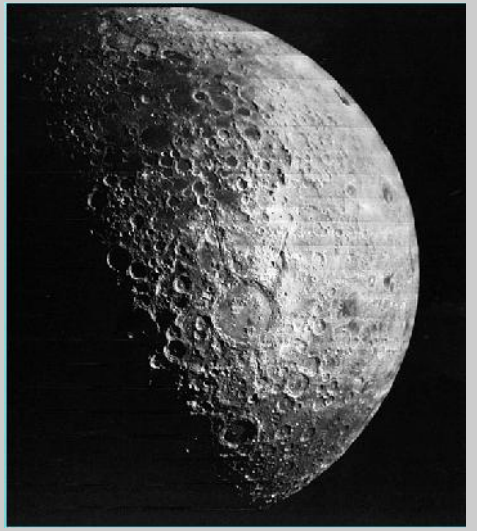
The Sun and not the Earth is at the center of the solar system



The orbits of the planets are elliptical, not circular (Kepler 1571 -1630)

Objects with different masses fall with same acceleration

The Moon as seen through his telescope didn't seem to be that "perfect"



Isaac Newton (1642 – 1727)

Derived the laws of motion (mechanics) and the law of gravitation

An apple falling from a tree and the Moon orbiting the Earth are governed by the same natural laws

Interaction among objects + initial conditions

Newton's Equations

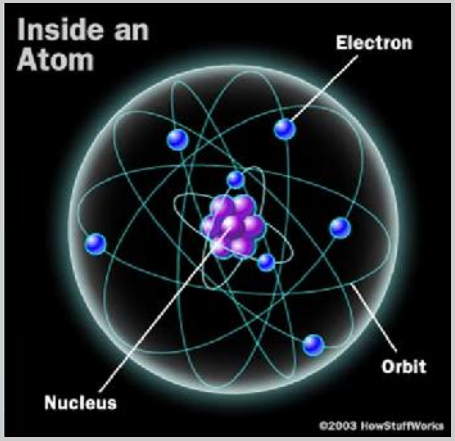
Exact location of the objects at any given time

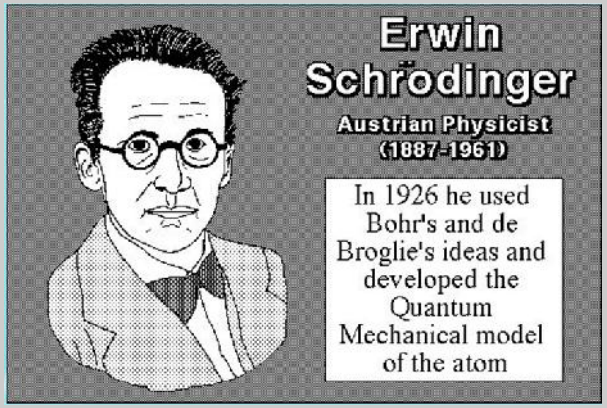
In Newton's Mechanical Universe there is no room for free will

Quantum Mechanics

The world of the atomic and sub-atomic particles didn't obey Newton's laws

Particles sometimes behaved like waves and waves sometimes behaved like particles. A new theory needed to be developed





Quantum Mechanics does not replace Newtonian (classical) Mechanics, but encompasses it

Interaction among particles + initial conditions

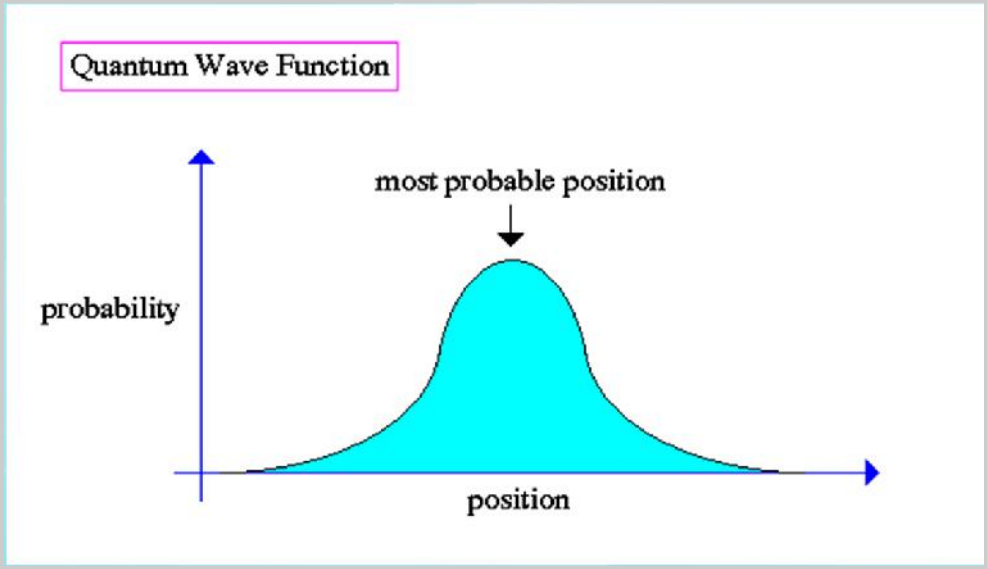
Schroedinger's Equation

Probability of finding the particles at any given position at any given time

The determinism of Classical Mechanics is gone

The Weirdness of Quantum Physics

The Copenhagen Interpretation



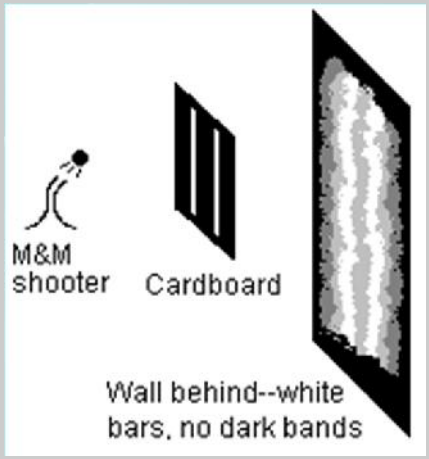
Observations not only disturb what is to be measured. It produces it.
In other words, an observation causes the wave function to collapse.

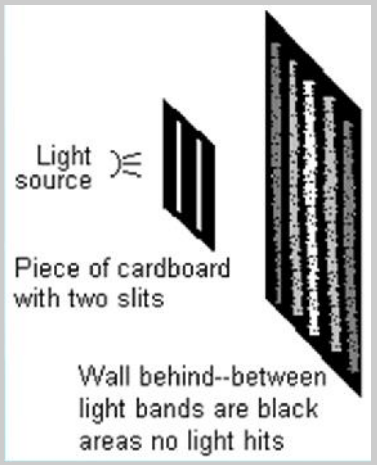
"God does not play dice" *Albert Einstein*

"I like to think that the Moon is there even when I am not looking at it" *Albert Einstein*

The Weirdness of Quantum Physics

The double-slit experiment





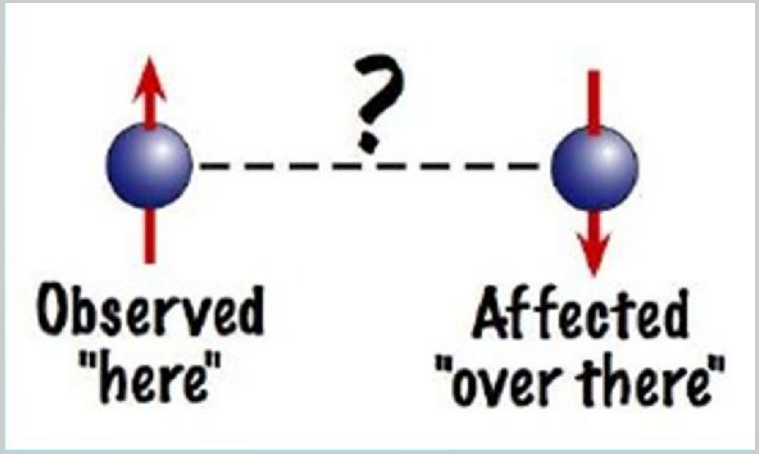
Shoot electrons through two slits and an interference pattern will appear on the screen

Shoot one electron at a time through two slits and an interference pattern still appears on the screen

Shoot one electron at a time through two slits, observing which slit the electron went through, and a particle pattern will appear on the screen

The Weirdness of Quantum Physics

Quantum entanglement



When particles interact with each other and then separated (across the room or across the galaxy), an observation of any property of one particle is always instantaneously correlated with the same observation in the other particle (*Einstein called it "spooky action"*)

The Weirdness of Quantum Physics

See video clip at

http://www.metacafe.com/watch/4096579/dr_quantum_double_slit_experiment_entanglement/

The Copenhagen interpretation does not deny a physically real world. It merely claims that objects of the microscopic realm lack reality before they are observed

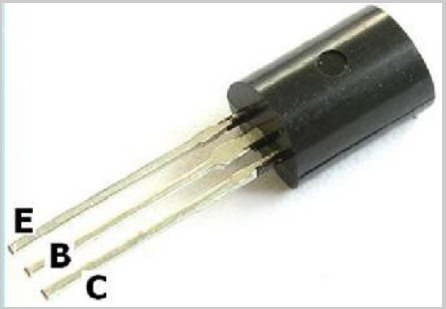
Quantum theory restores the concept of free will

The free will to make an observation impacts the reality of the physical world that is observed. This is when physics encounters consciousness

The Weirdness of Quantum Physics

Quantum physics works perfectly. No prediction of the theory has ever been shown in error
Quantum physics is the most accurate theory in all of science

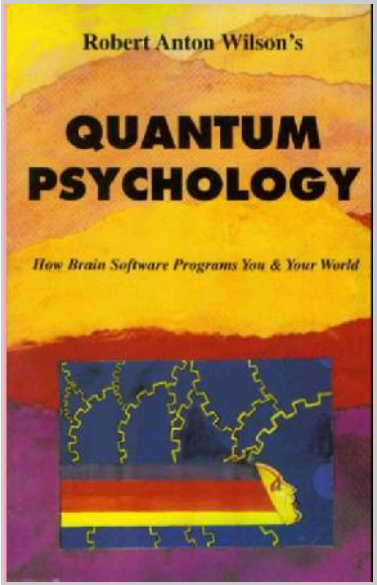
One-third of our economy involves products based on quantum theory.
Ex: laser, transistor, and MRI

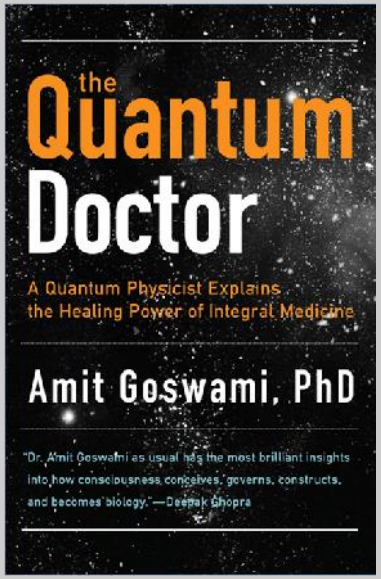


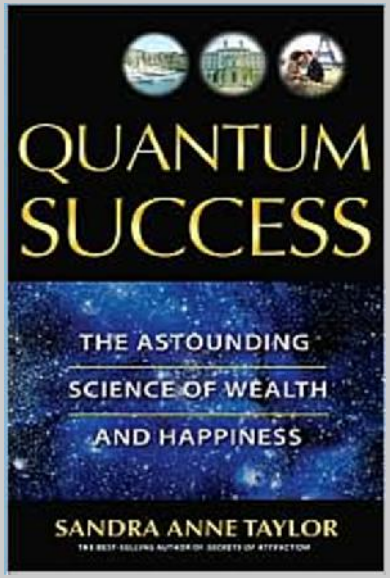
The controversy (since its inception over 80 years ago) has never been about its validity but how to interpret it.

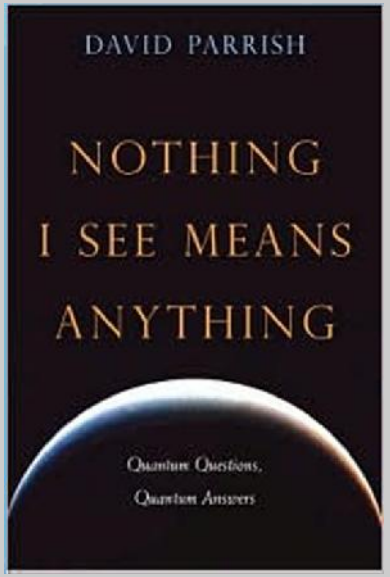
Is it possible to extend quantum physics concepts to the realm of psychology, health, finance or spirituality?

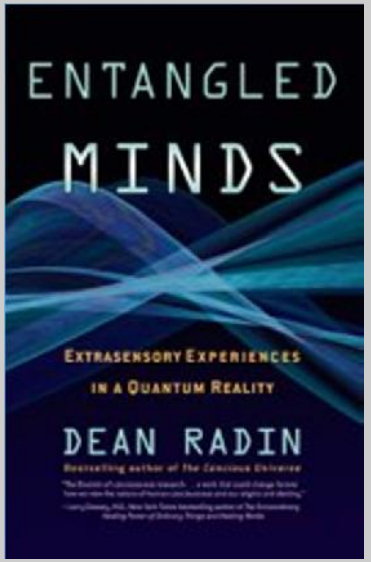
"Bold speculation may be in order, but so is modesty and caution. A speculation is nothing but a guess until it makes testable and confirmed predictions"











Common analogies (or speculations)

Connectedness – Everything and everyone is connected

Reality – Everything is an illusion; nothing is real

Mind power – The mind creates the reality one desires

Quantum theory was developed to model the microscopic world of atomic and sub-atomic particles. However, its interpretation is very conducive to speculations about its applicability to the spiritual realm.

Perhaps, through Quantum Physics, Nature is trying to tell us something that goes beyond the material world in which we live. But, as of now, the interpretation of Quantum Theory applied to spirituality is nothing but speculation