

Quantum Physics and Vedanta

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Quantum Physics and Vedanta

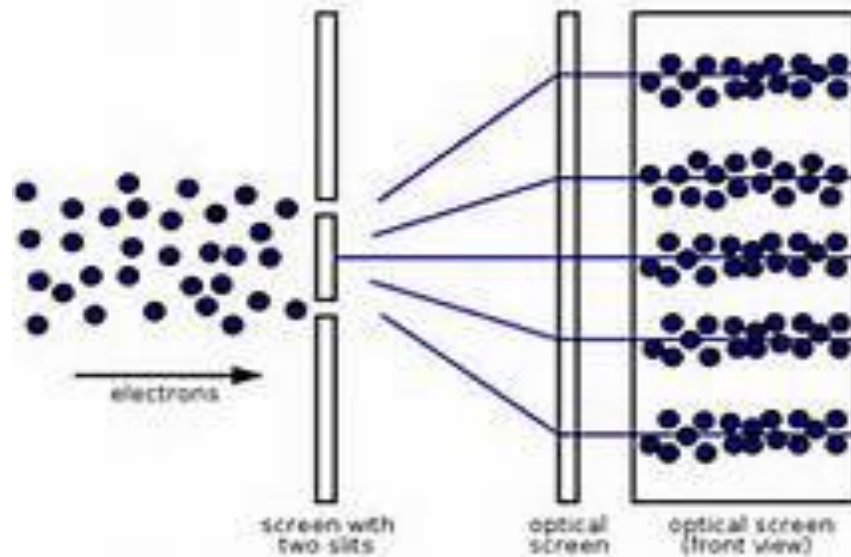
- Science and Vedanta looking for the same reality
- Science looking 'Out there'
 - God's Particle
 - Theory of Everything
 - Unifying Force
 - Still a Stumbling block
- Vedanta 'In here' - successful

Physics History

- Classical Physics – Newton
 - Newton 3 Laws of Motion
 - Universe is a Machine
- Quantum Physics – Beginning of 20th Century
 - Sub Atomic Particles – Unpredictable behavior – Wave/Particle
 - Classical Laws not applicable

Quantum Physics Overview

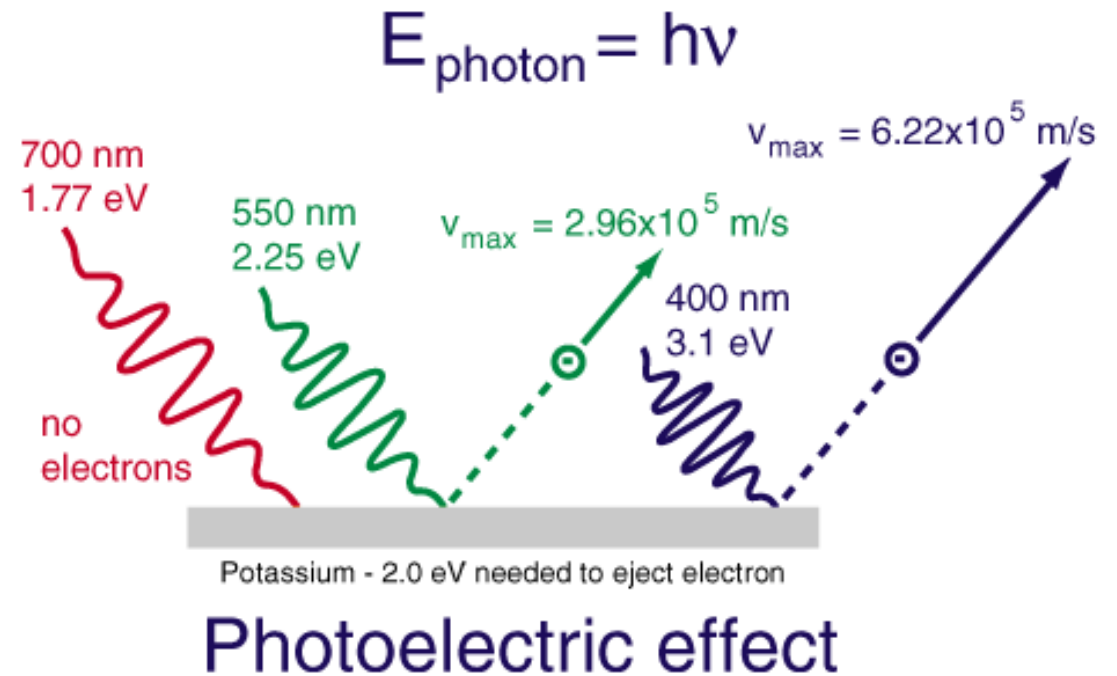
- Light is a Wave
 - Thomas Young, 1805 – Double Slit Experiment



Quantum Physics Overview

- Light is a Particle
 - Einstein 1905 – Photo Electric Experiment
 - Won Noble Prize in 1921

<https://www.youtube.com/watch?v=DfPeprQ7oGc>

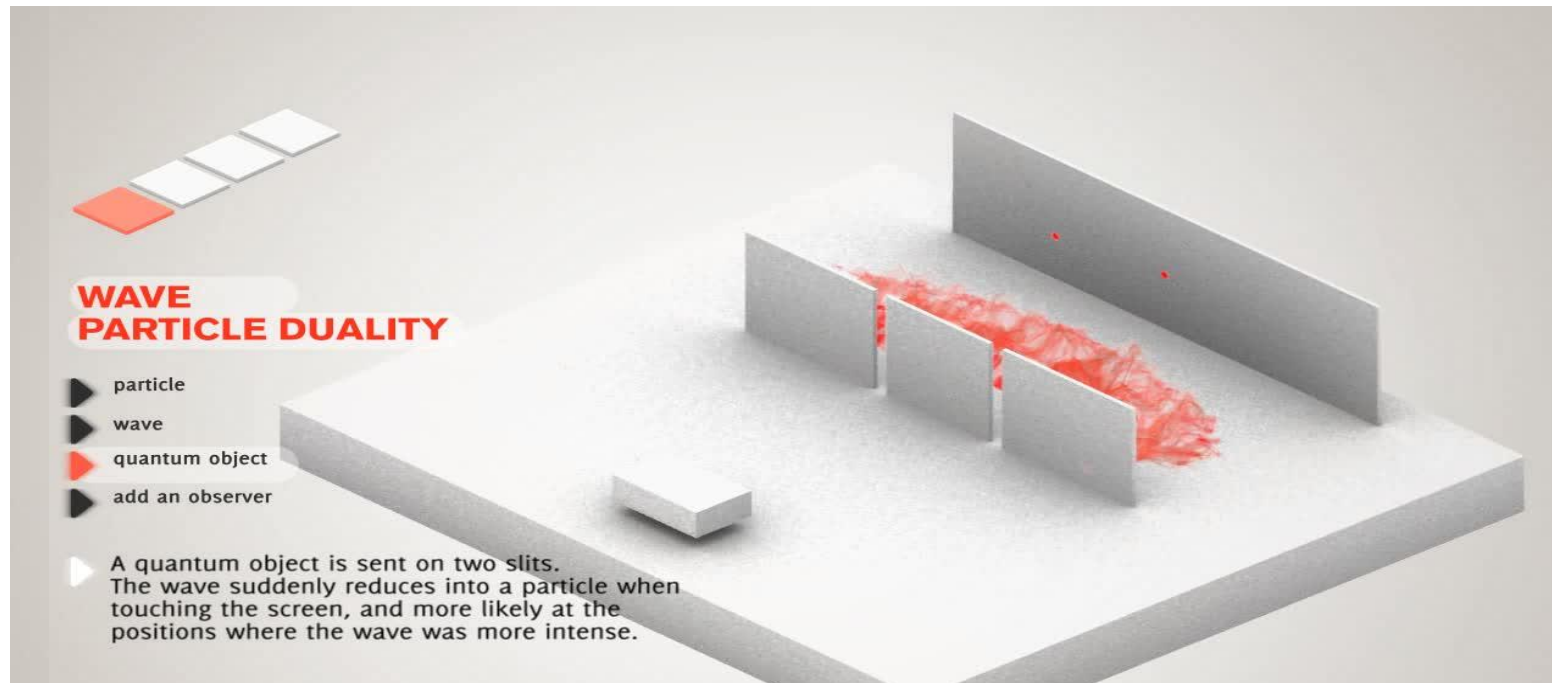


Quantum Physics Overview

- De Brogile – Doctorial Thesis in 1923
 - Won Noble Prize in 1929
- Not only Light, but Matter is Both Wave and Particle
- Question? –
 - When Wave and When Particle?
 - Can they be Wave and Particle at the same time?
 - Where is the wave residing?

Quantum Physics Overview

- Schrodinger Wave Equation – Heart of Quantum Physics
 - Represents Physical System –
 - Preparation Area and Measurement Area
 - Observed System and Observer System



Quantum Physics Overview

- Must be a standing wave

Second derivative with respect to X

Shrodinger Wave Function

$$\frac{\partial^2 \psi}{\partial x^2} + \frac{8\pi^2 m}{h^2} (E - V) \psi = 0$$

Position

Energy

Potential Energy

Planck's constant

Called the "del-squared operator", this quantity describes how the wavefunction, Ψ , changes from one place to another

A mathematical quantity called an "imaginary number". It is equal to the square root of minus one

$$-\frac{\hbar^2}{2m} \nabla^2 \Psi + V \Psi = i\hbar \frac{\partial \Psi}{\partial t}$$

The mass of the particle being described

Describes the forces acting on the particle

Describes how Ψ changes its shape with time

- Generic Wave Equation – Input Energy for an object to represent Wave Function for that Object
- Probability Wave Function – Square the equation – Schrodinger's Cat
- Collapsing of Wave Function – Observing System Interaction

Quantum Physics Overview

- Schrodinger Wave Equation – Unanswered Questions?

Q 1: Standing Wave – Where is the 'Walls' medium for the wave

Q 2: What is Wave Made of?

Q 3: What is the Propagation Medium? It is not Ether

Q 4: Where do Wave Reside? – Not in Particle because wave creates particle

Q 5: Can Matter collapse the Wave?

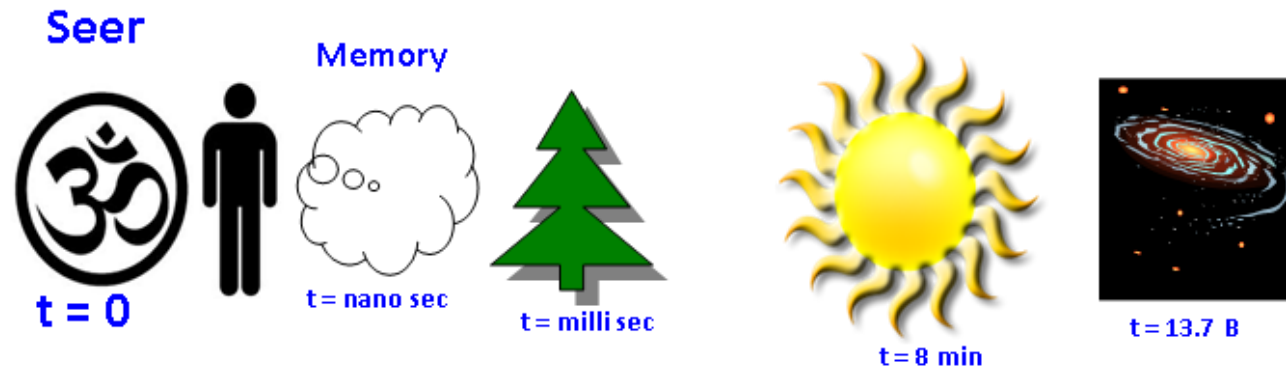
Q6: What is Collapsing of Wave?

Understanding t (time) = 0

- For better perspective, important to understand $t = 0$
- $t = 0$ means 'Now'
- Big Bang is not $t = 0$, Big Bang is $t = 13.7$ billion years old
- Any perception process must have
 - Subject or Observer
 - Object or Observed

Where is $t = 0$ for Observer?

- The Observer within you is $t = 0$



- Everyone living being has their own $t = 0$
 - Are their multiple $t = 0$
- Vedanta teaches Atma is Observer, so Atma is $t = 0$, single $t = 0$
- Single $t = 0$ in multiple minds – How to understand this?
 - Bucket example

Where is $t = 0$ for Observed/Object?

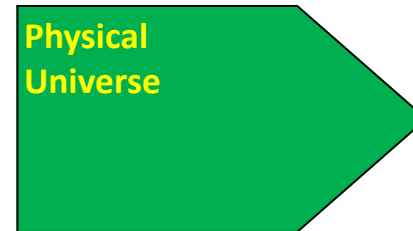
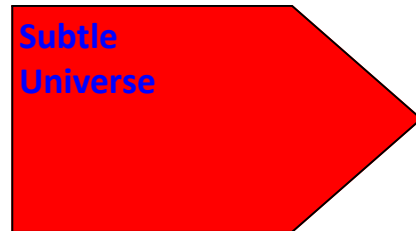
- Universe is only made of 'Memory Object'
 - Star – 1 million years old, Sun 8 min old, Moon = 3 sec old
- Where is the 'Now' Star, Sun, Moon? Where is the 'Now Object'?
 - Science adds to confusion between 'Memory' and 'Now'
- Where is 'Now' Universe? 'Now' must be $t = 0$
 - $t = 0$ is the Atma.
 - 'Now' Universe is Atma
- Where is the Sun? if it is 5 min old, 30 sec old
 - The Sun is within you, within the Observer
- All 'Now' Objects in the Universe are within Observer

$t = 0$ is Pure Awareness

- In $t=0$ all Objects are in Potential Form
- $t = 0$ is Subject or Observer
- $t = 0$ is both Subject and Object. It is Non Dual
- Awareness = Subject + Object
- $t = 0$ is Awareness. It is beyond Space time framework
- Science understands $t = 0$. Therefore it should understand Awareness.

Vedanta Cosmology

1. Creation of the Seed Body
2. Creation of the Subtle Universe
3. Creation of the Gross/Physical Universe



Seed or Causal Body

- Seed body is called Avaktya – Un-manifest or Potential Form
 - Comparison with Seed for Tree
 - Seed body is $t=0$
- Seed Body contains
 - Vasanas – Tendencies
 - Pending Karma Phalas
 - Blue Print of Life
- Seed body for Individual and Cosmic
- Seed body germinates to cause the Subtle and Gross body

Subtle Body

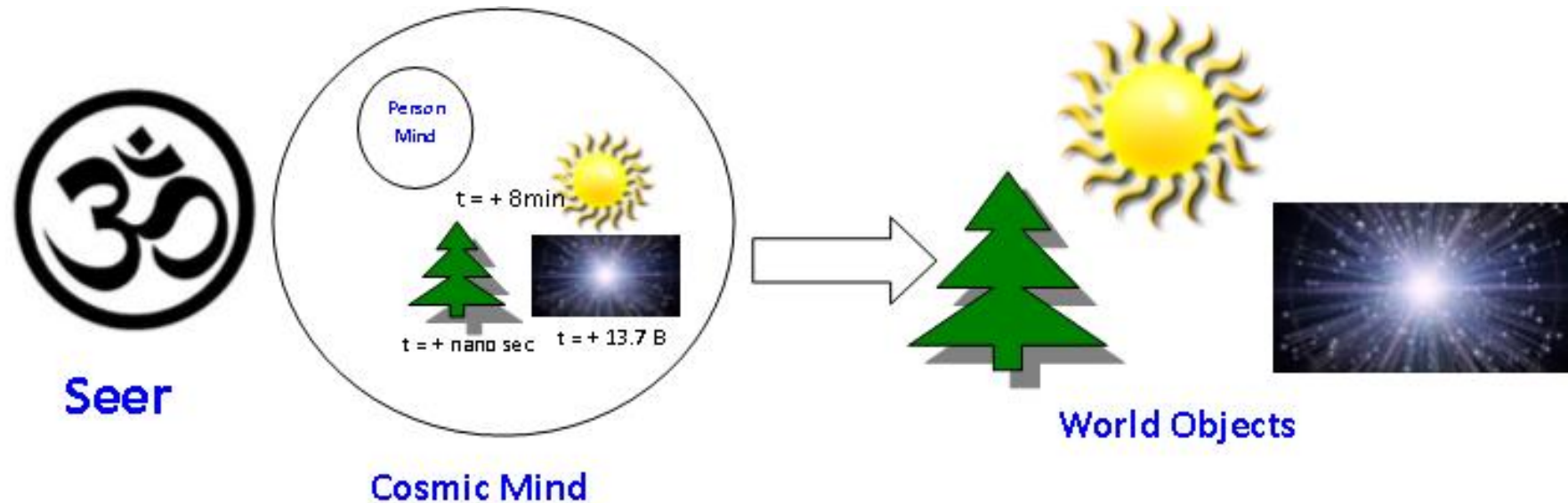
- Mind is our Subtle Body – Full of Consciousness
- Mind creates duality
 - Buddhi – the home of the Subject
 - Manas – the home of Object
- The Blue Print of Life plays out in the Manas
 - Vritti or mental waves bounce within the Manas and Buddhi
- Fully functioning Subtle Universe made-up of Vrittis
 - Complex wave forms representing living and non living being

Subtle Body

- Reading of the Complex wave forms – Collapsing of Wave
 - Step 1 – Vritti Vypati
 - Step 2 – Phala Vypati
- Vritti Vyapti – The Buddhi wraps the Vritti
- Phala Vyapti – Shape or ID is given – Wire diagram
 - Usually based on Previous Impressions
 - Consciousness fills this Wire Diagram to create Object
- This Object is Viewed by Subject/Atma

Gross/Physical Body

- Maya Shakti Projects this Object as the Gross Universe
- Gross Universe is made up Memory Objects Only



Time vs. Space

- Newton – 3D Space + Time.
- Einstein – Space Time – 4 D
- Vedanta: Space is Gross and Time is Subtle
 - Both are the same expect being gross and subtle
- If Time is subtle it must be a Vritti or mental wave
- Time Wave + Object Wave = Time Object Wave
 - Mathematical formula with time as a variable
 - History of Object over time
- Collapsing of Time Object Wave
 - Each collapse is unique for every living being

Energy vs. Mass $E = MC^2$

- Vedanta: Mass is Gross and Energy is Subtle
- If Energy is subtle it must be a Vritti or mental wave
- Energy + Time + Object Wave = Energy Time Object Wave
 - Mathematical formula with time and energy as a variable
- Schrodinger Equation has time and energy as variable
- Schrodinger Equation represents Vritti in the Mind

De Broglie Revisited

- De Broglie said Matter is both wave and Particle
- No confirmation when wave and when particle
- Vedanta can provide the missing link
 - Wave represents Subtle Universe
 - Particle represents Gross Universe
 - Example JPEG image
- Vedanta supports De Broglie and De Broglie supports Vedanta

Schrodinger Equation Revisited

	Schrodinger	Mind
System	Observing and Observed System	Atma and Vritti
Wave Requirement	Standing	Standing
Variables	Time and Energy	Time and Energy
Collapsing	Observing System	Atma

Schrodinger Equation Revisited

Q 1: Standing Waves need 'Walls' to Operate

A 1: Mind is the only place with 'walls'

Q 2: What are Waves Made of?

A 2: Vedanta says Waves are made of Subtle elements

Q 3: Propagation Medium

A 3: Mind is full of Consciousness and is the medium of propagation

Schrodinger Equation Revisited

Q 4: Where does wave Reside?

A 4: Cannot be Gross Object, it has to be in the Mind

Q 5: Can Matter Collapse Wave?

A 5: Impossible Matter itself is a Wave. Only Atma can do it

Q 6: What is collapsing of Wave?

A 6: Vritti Vypati and Phala Vypati in presence of Awareness

Classical vs. Quantum Physics

- Laws of Classical and Quantum Physics are different
- It is only logical because
 - Classical Physics deals with Gross World – Memory Objects
 - Quantum Physics deals with Subtle World – Now Objects and Waves
- Science is studying Memory Objects to understand Subtle World.
They will never succeed.
 - It is like watching a DVR movie and trying to understand what is human being made up off.

Summary

- Both Science and Vedanta agree Matter exist as Particle and Waves or Gross and Subtle
- Science has to realize that Waves can only exist in the Mind
- Quantum Physics is really the study of Mind Waves
- Mind Waves creates the Gross Universe and not the other way around.