

Einstein's Big Idea



Activities Unlimited Presentation

By

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January 18, 2022

Einstein' Big Idea

'Einstein's Big Idea' is a PBS NOVA DVD based upon David Bodanis's book $E=Mc^2$ containing 9 interesting Chapters

Complete Video

<https://www.youtube.com/watch?v=ROC8zSiw1x4&list=PLEE84DBE654AFF57D>

Einstein's Big Idea

- Intro
- Bern, Switzerland, 1905. Einstein completed 4 of the most significant scientific papers in history
- Before he completed his study and paper on General Relativity! He determined:
 - Speed of Light was Constant with Time 'Dilation' (Time Changing)
 - ENERGY and MASS are equivalent.
 - **$E=MC^2$**

Energy

- E is for Energy
- 1812, Michael Faraday –
Invented/Combined the effects of
Electricity and Magnetism.
- Started in Lord Dalton's shop and realized
the E&M can convert back and forth
leading to E&M Waves travelling at the
Speed of LIGHT.

Mass

- M is for Mass
- Late 1700's Lavoisier- Law of the Conservation of MASS.
- He very accurately performed experiments demonstrating that 'Mass is Neither Created nor Destroyed'.

Squared

- '^2'- is for Squared
- 1722 - Emille du Chatelet- She was an important Scientist in France, and developed the concept the $F = Mv^2$ (Mass, velocity) by accurately dropping balls from various heights and distances into controlled trays of sand

The Holy Grail of Physics

$$E=MC^2$$

Video: Einstein History and Epiphany

[https://www.youtube.com/watch?v=IPGWMUdaPYE
&list=PLEE84DBE654AFF57D&index=6](https://www.youtube.com/watch?v=IPGWMUdaPYE&list=PLEE84DBE654AFF57D&index=6)

Video: Einstein History and Epiphany



Unlocking the Atom

- ❑ Lise Meitner- Worked in Berlin on studies of Atoms by firing neutrons into the Nucleus of Uranium atoms in an attempt to increase their 'size'.
- ❑ She discovered that since the Uranium atom was unstable, it actually broke into smaller atoms, releasing the energy within.
- ❑ She calculated the value identified the application of Einstein's equation to Nuclear Fission.
- ❑ She was Austrian and forced to leave Germany in 1938, and never recognized for Pulitzer Prize.

Video: Splitting the Atom

- https://www.youtube.com/watch?v=Sc_NyUAsVBg&list=PLEE84DBE654AFF57D&index=8

Video: Splitting the Atom



The Future

□ Discussion:

- Current and future developments related to the 'BIG IDEA'.
- Global Energy Requirements
- Electricity Generation
- Nuclear Waste Disposal

The Future

- Next Science Club Meeting:
 - Tuesday February 15, 2022
 - Location: VFW Midland Park
 - Time: 10:30
- Future Topics:
 - The Big Bang
 - Biology/DNA



Have a Good Week

The next General Meeting is on Tuesday
February 8th at the Franklin Lakes
Ambulance Corps