Einstein's Big Idea

Activities Unlimited Presentation

By

Jack Yurasek

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

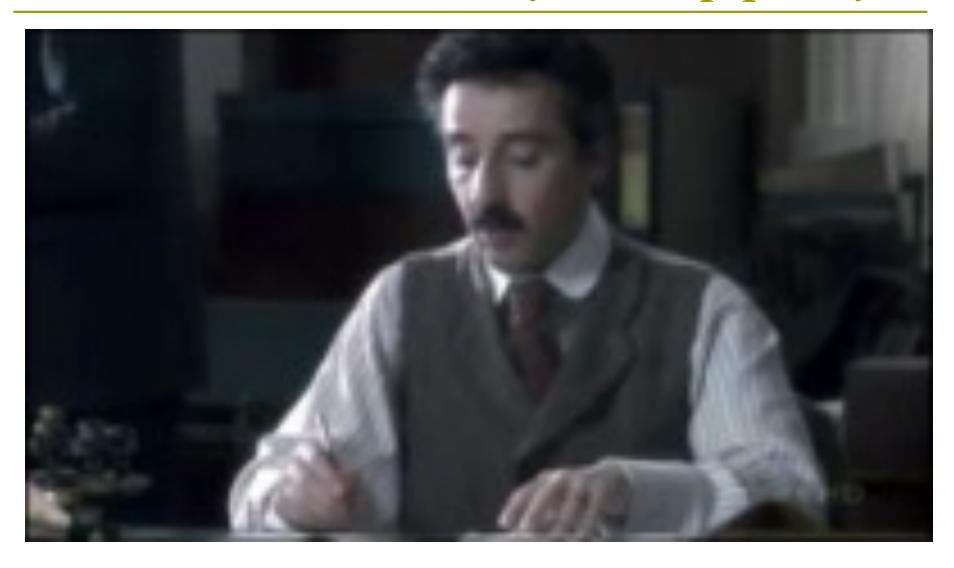
The Holy Grail of Physics

$$E=MC^2$$

Video: Einstein History and Epiphany

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

Video: Einstein History and Epiphany



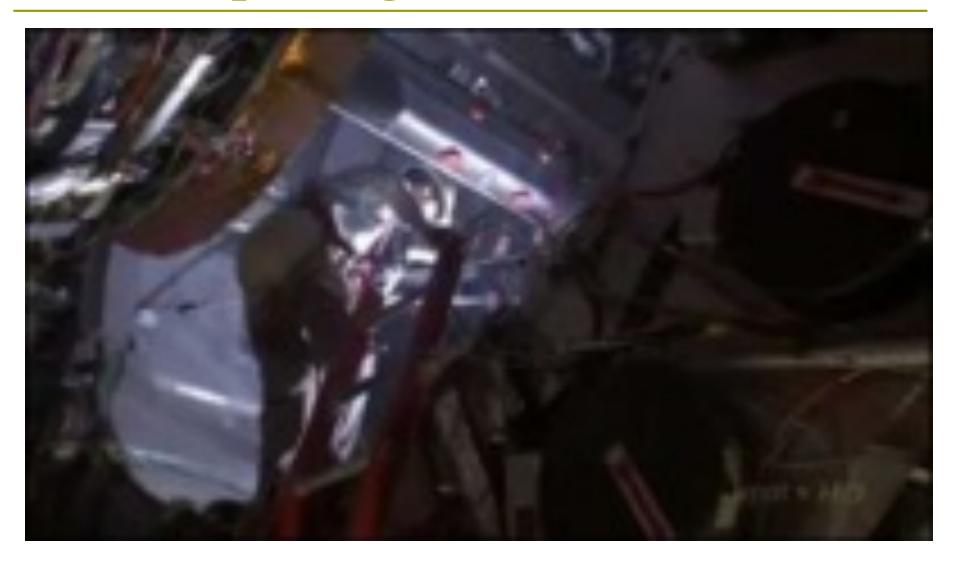
Unlocking the Atom

- 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_NyUAsVB g&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