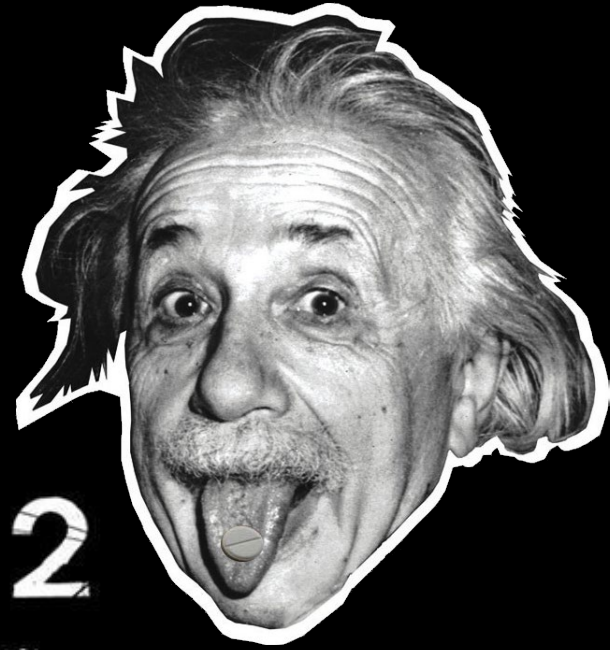
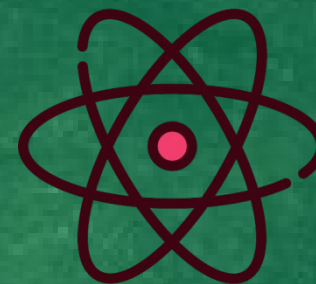
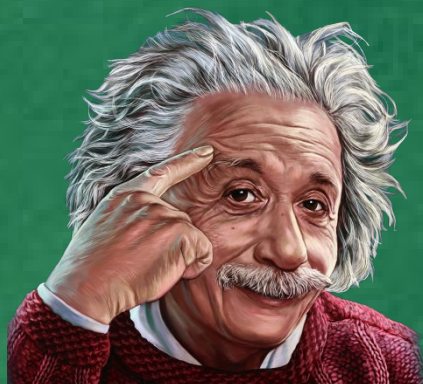


$$E=MC^2$$



clearly stated



In memory of **Albert Einstein**

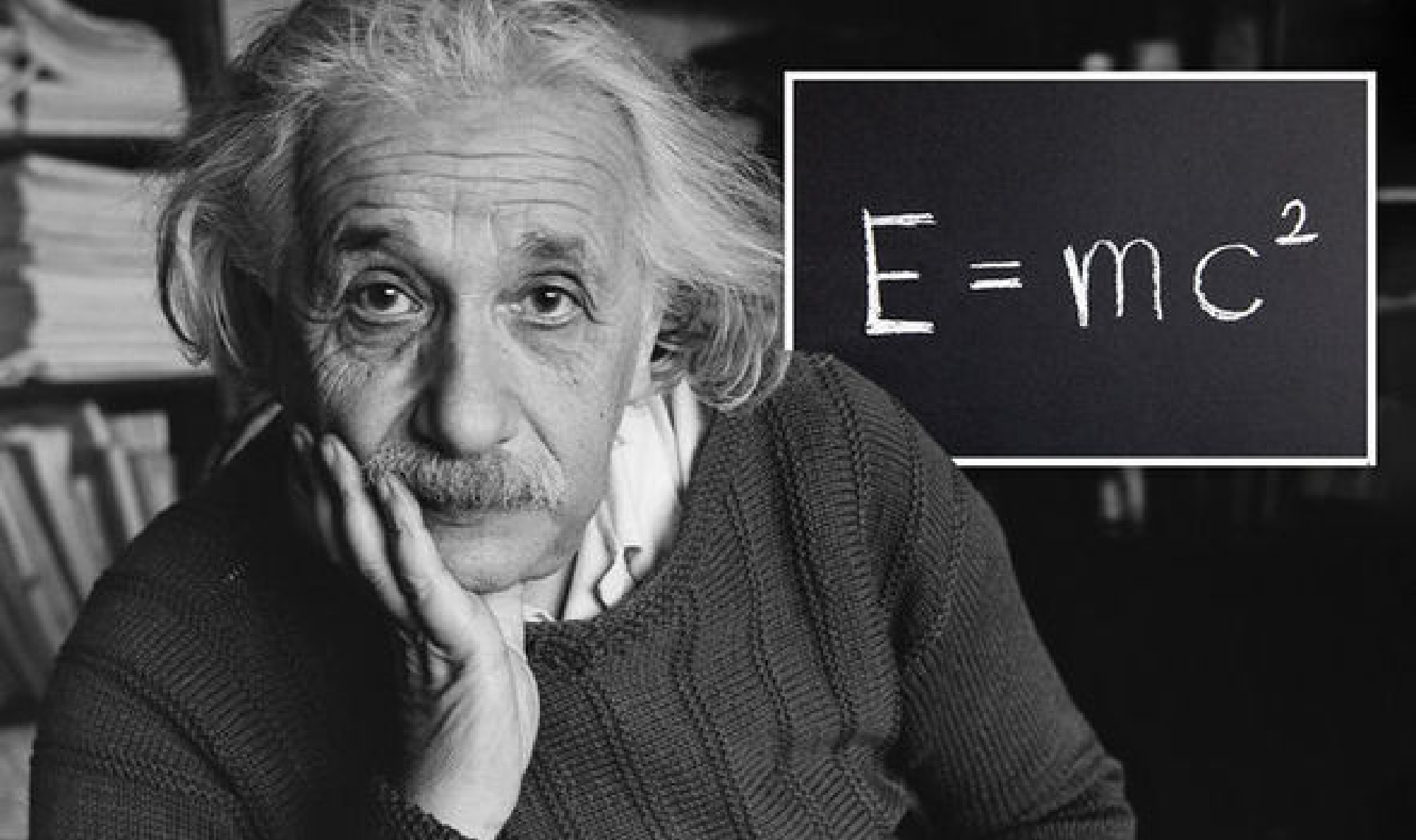
Complied by:

Manjunath.R

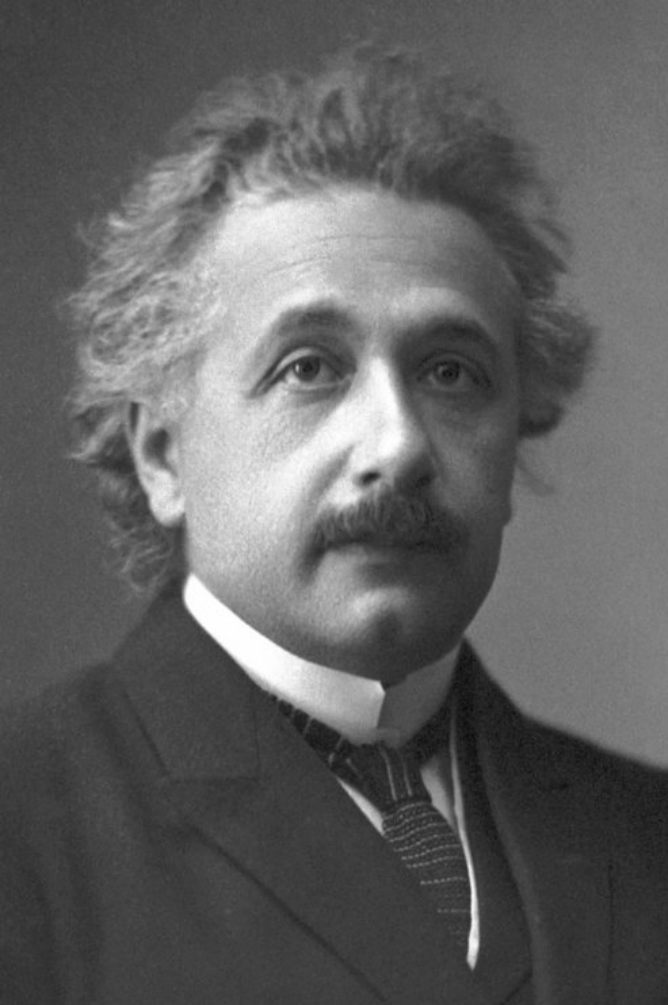
#16/1, 8th Main Road, Shivanagar, Rajajinagar, Bangalore 560010, Karnataka, India

*Corresponding Author Email: manjunath5496@gmail.com

*Website: <http://www.myw3schools.com/>



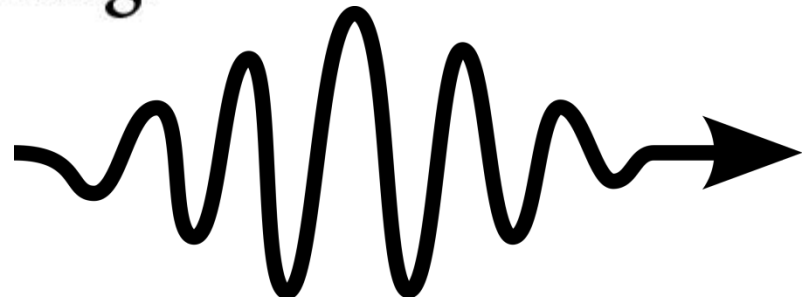
$$E = mc^2$$



I Didn't Write ' $E=mc^2$ '. I Wrote:

“If a body gives off the energy L in the form of radiation, its mass diminishes by L/c^2 ... the mass of a body is a measure of its energy-content.”

To be fair though, they are both different ways of saying the same thing.

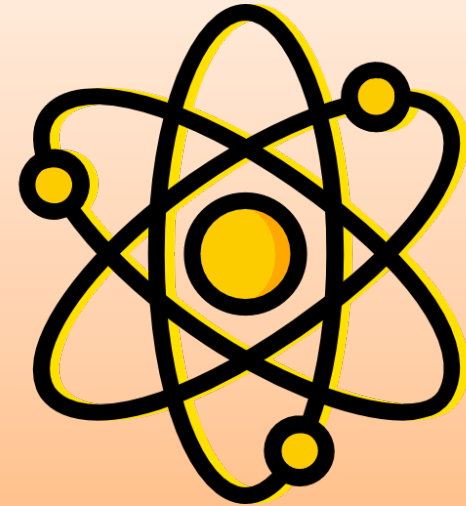




$$E=mc^2$$



- **E = energy**
- **m = mass**
- **c = speed of light**



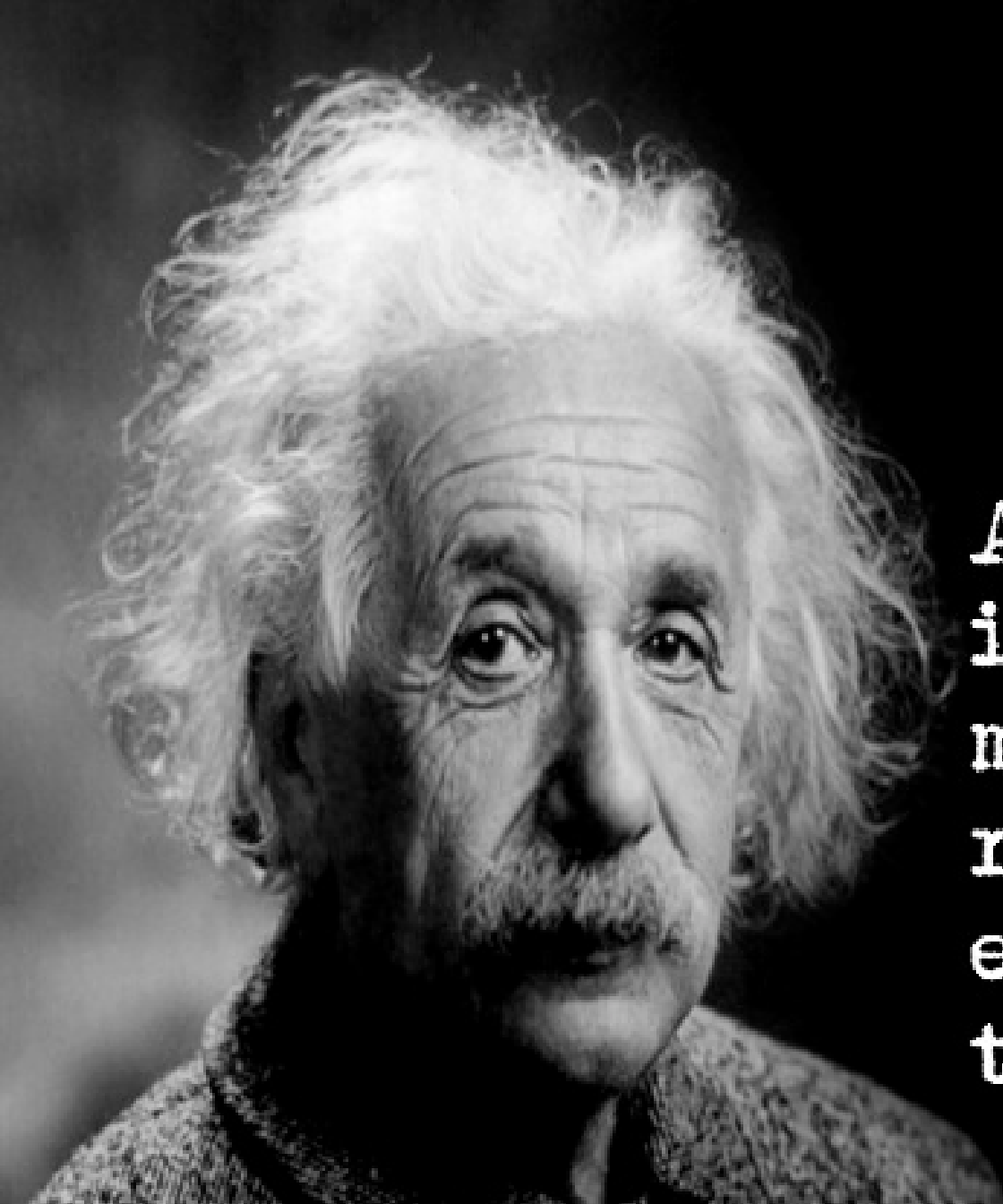
The equation that gave birth to the atom bomb and heralded a new world of atomic physics



$$E=mc^2$$



Because c is constant, the equation **$E=mc^2$** tells us that mass and energy are interconvertible and are two different forms of the same thing and are in fact equivalent.

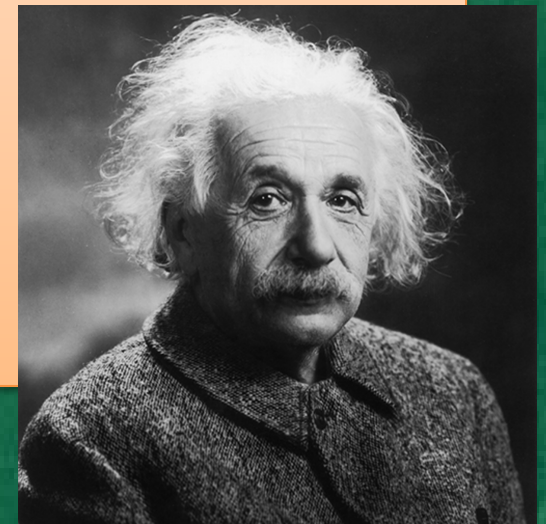
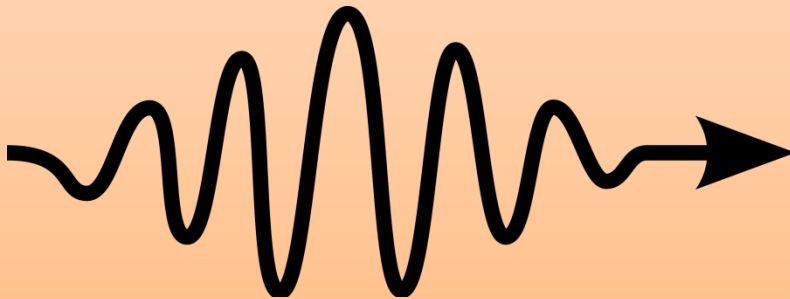


All of science
is nothing
more than the
refinement of
everyday
thinking.

- Albert Einstein

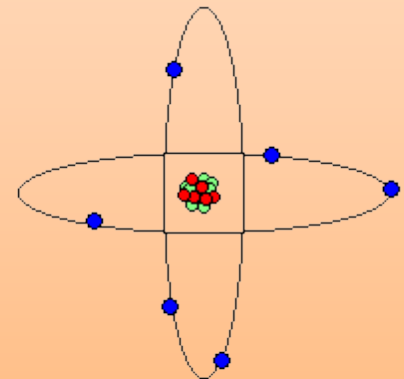
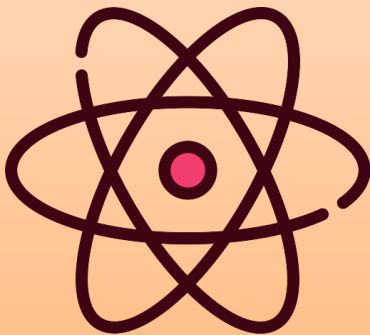
$$c = 3 \times 10^8 \text{ m/s}$$

As we know c^2 (**the speed of light multiplied by itself**) is huge: 9×10^{16} meters² per second². So if we convert a small amount of mass, we'll get a tremendous amount of energy. For example, if we convert 1kg of mass, we'll get energy of **9×10^{16} J** which is equivalent to **21 megatons of TNT**.





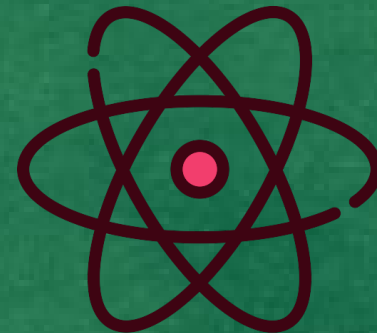
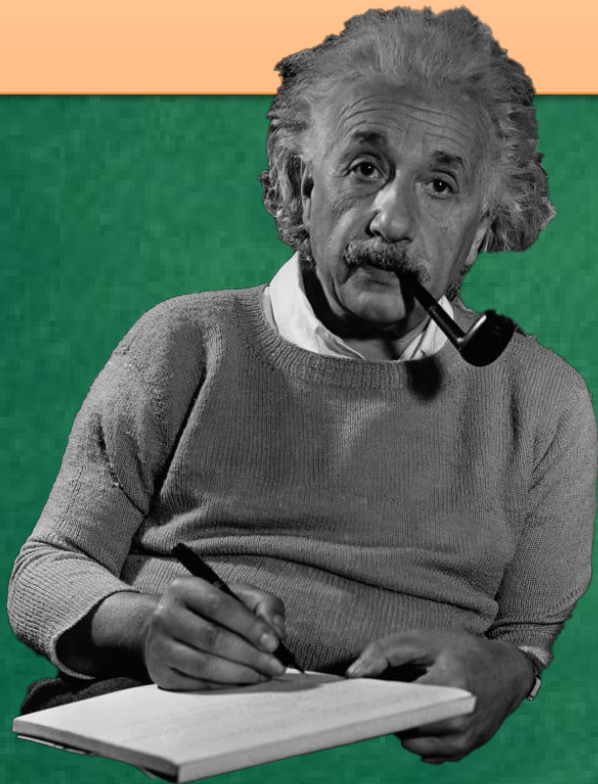
Because of the **equivalence of energy and mass**, any normal object is forever confined by Einsteinian relativity to move at speeds slower than the speed of light. Only light or other waves that have no rest mass can move at the speed of light.



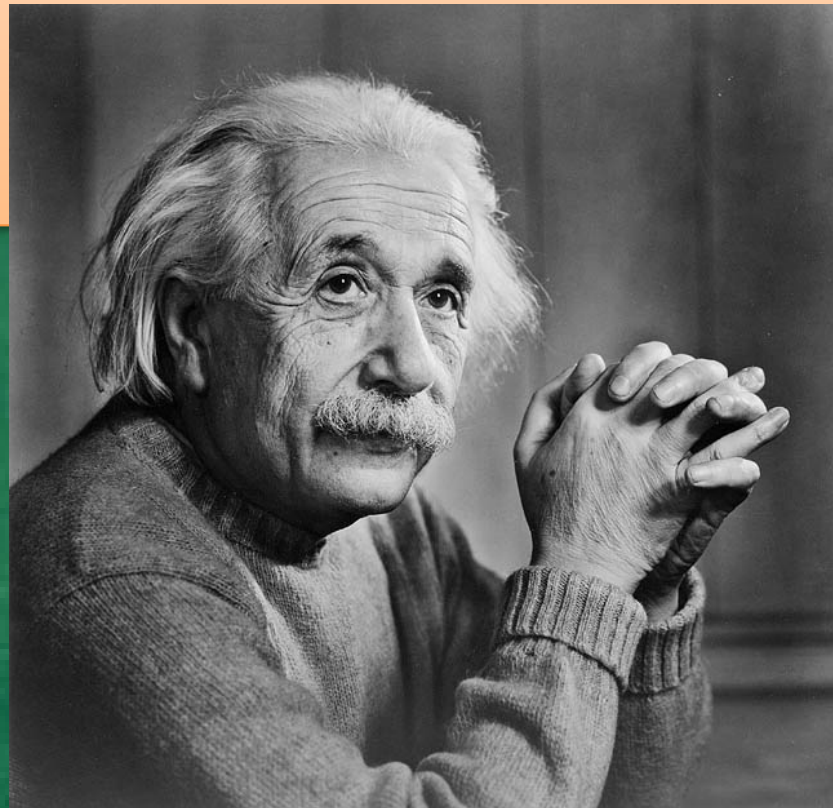
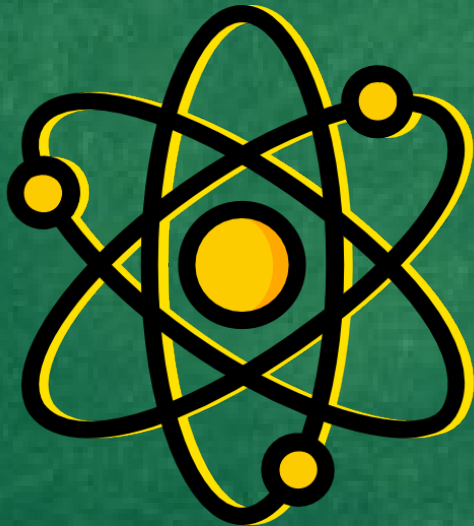
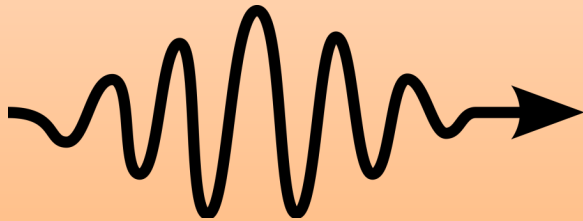
c is not just the **constant** namely the maximum distance a light can travel in one second but rather a fundamental feature of the way space and time are unified to form space-time.



Many physicists and scientists have discussed about **mass annihilation** at different times. Even a level one literate know that when an electron and a positron approach each other, they annihilate i.e., destroy each other. This process what a quantum physicists call the mass annihilation. During the process their masses are converted into energy in accordance with **$E = mc^2$** .

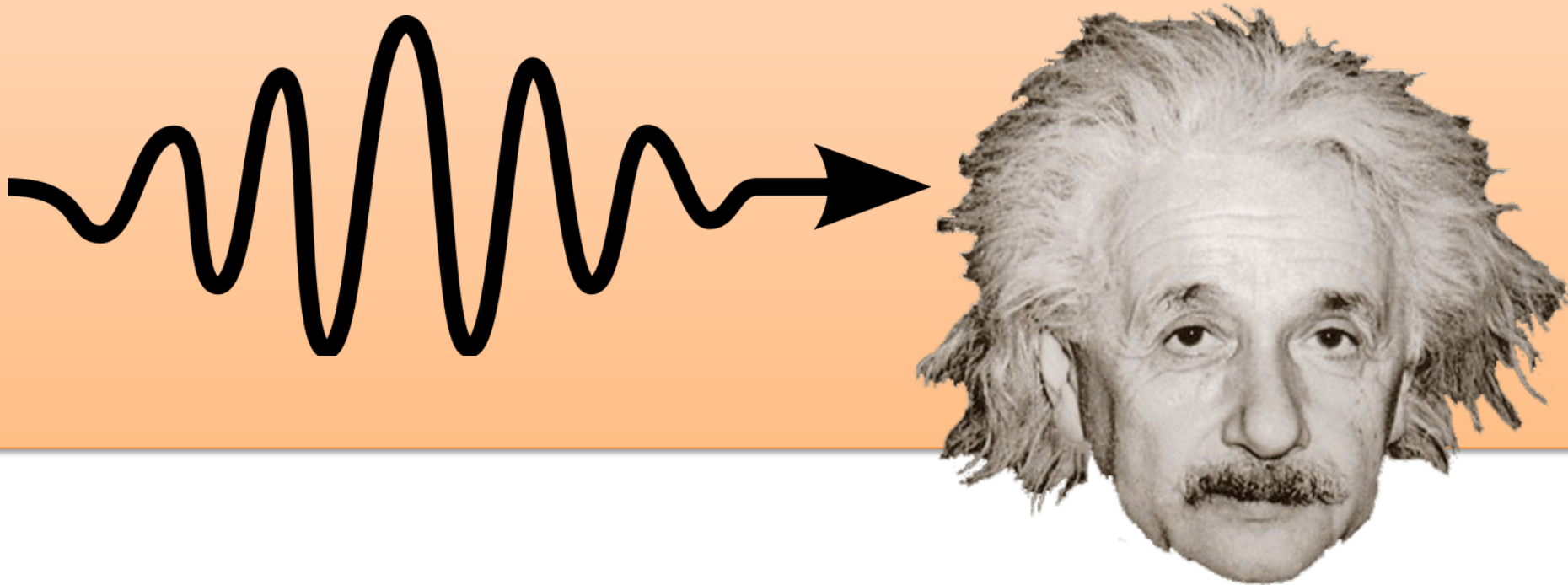


Energy equals mass times the speed of light squared underlies fundamental properties of the universe itself – mass is energy, energy is mass: the equation **$E=mc^2$** builds a bridge between two seemingly disparate domains mass and energy.



Because **$E = mc^2$** , virtual particle-antiparticle pairs of mass **m** are continually being created out of energy **E** of the 4 dimensional fabric of space-time consistent with the uncertainty principle, and then, they appear together at some time, move apart, then come together and annihilate each other giving energy back to the space-time without violating the law of energy conservation.

Spontaneous births and deaths of virtual particles so called **quantum fluctuations** occurring everywhere, all the time – is the conclusion that mass and energy are interconvertible; they are two different forms of the same thing.



“

The most beautiful experience we can have is the mysterious... Whoever does not know it and can no longer wonder, no longer marvel, is as good as dead, and his eyes are dimmed.”

EINSTEIN on mystery

