Lesson 5: Current Status of Physics

Nowadays, there is a lot of discoveries and inventions in different parts of the world. Among this some are listed below.

Major recent discoveries in Physics

Physics is the study of physical world from the smallest particles to the gigantic structures known to human; galaxies, clusters of galaxies and black holes. Some of them are,

Discovery of Exoplanets:

Exoplanet or extrasolar planet is a planet outside our solar system. As of 1 October 2022, there are 5,197 confirmed exoplanets in 3,833 planetary systems.

Black hole:

Black hole is a region of space-time the gravity of it so strong that nothing can escape. Not even, light (electromagnetic wave).

Quantum cryptography:

Cryptography is a way of sending information and messages in secret. Think of your bank account number, password etc. without the secret encryption all these are at risk. Quantum cryptography is an application of quantum physics that enhances the security of the information exchange at higher level.

High energy physics (Particle Accelerators)

July 4, 2012 EC, CERN scientists (thousands of them doing collaboratively from almost every corner of the world) discovered a particle called Higgs Boson. It is a subatomic particle like photons, protons and electrons but at the very basic level. The experiment took 60 years to prove the existence of this particle.

Gravitational wave (Large scale structures)

Even more years have taken to prove Albert Einstein's theory of gravity that says gravity is a wave that travels with the speed of light 3.00 X 10 8 m /s. The hypothesis was formulated in 1916, it was proved to be right in 2016 by LIGO, it took again thousands of scientists' collaborative work. They use Laser Interferometer as shown in the figure.

Global warming:

Global warming is an increase in earth's temperature and its impact on earth's climate.

Climate is a long-term weather variability averaged over many years and decades. Some of the variables are temperature, humidity, atmospheric pressure and wind.

James Webb Space Telescope (JWST)

It is an infrared telescope located between earth and sun at a distance of 1,500,000 km beyond Earth's orbit around the Sun. It is operating at the temperature of (−223 °C) important for infrared detection of the galaxies and other large-scale structures.

Future perspectives.

Research at the forefront is very expensive (Billions of dollars), it is also needing a collaboration of scientists from many fields. It also involves many countries.

Rich countries have huge laboratories of their own with many physicists involved. Ethiopia as developing country must start doing physics at the highest level for its national security and sustainable growth. the Ethiopian Science and Art Museum inaugurated by PM Abiy Ahmed 4 October 2022 would stimulate and attract young students towards science. It is situated in Addis Ababa.

The museum holds exhibition hall dedicated to scientific and developmental research. It also includes several building complexes dedicated to interactive display screens, cyber security, geographical information system (GIS), data analysis, manufacturing, and robotics to name a few.

Planetarium: Inside this dome you can seat and watch from our solar system to stars and galaxies. It is an amazing and inspiring place for young and old alike.