## Quantum Physics





- studies fundamental particles
- these particles are also waves as opposite to classical physics where a particle is just a particle and wave is wave
- e.g. electron around nucleus moves like a wave creating a 'cloud' called orbital as opposite to 'classical' particles moving on trajectories e.g Earth around sun
  - quantum from Lat. (how much) refers to minimum amount; first used by Helmholtz



## History: few milestones in quantum physics

- Democritus (460-370 B.C.) disciple of Greek philosopher Leucippus first described ATOM = cannot be cut (Gr. a + tomein) as the fundamental part of matter.
- 1983 W and Z bosons
- 1995 tau neutrino
- 2000 top quark
- 2012 Higgs boson

## The Nobel Prize in Physics 2013



François Englert Université Libre de Bruxelles, Belgium



Peter W. Higgs University of Edinburgh, UK