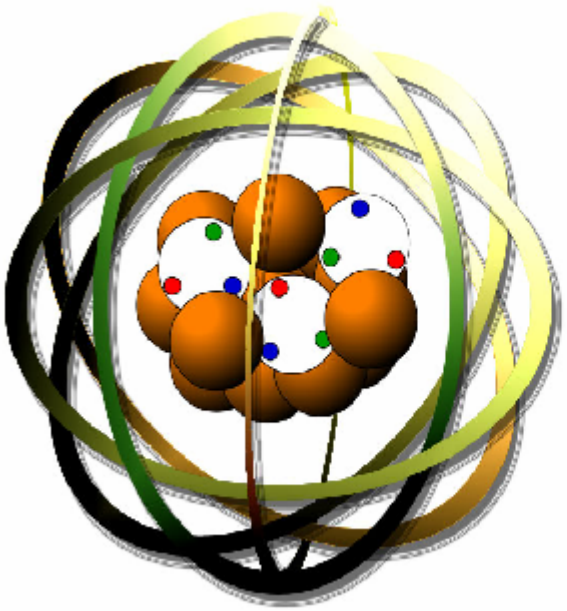
Who Discovered Neutrons?



An atom is made up of three types of elementary particles called electrons, protons and neutrons. The neutrons and protons constitute the nucleus of the atom while the electrons revolve around the nucleus in different orbits. Neutron is a subatomic particle that does not have any electric charge. Protons and electrons however carry equal positive and negative charges respectively but neutron has no such charge. The mass of the neutron is slightly greater than that of the proton. Do you know who discovered the neutrons?

Neutron was discovered by a British Physicist named Sir James Chadwick. In the early 1900s, scientists were aware that an atom contained electrically charged particles called electrons and protons. Scientists believed that there must be uncharged particles also in an atom. In1932, Chadwick showed that the radiation from the element beryllium, caused by the bombardment of alpha particles is actually a stream of electrically neutral particles. He called these particles neutrons. He also studied some other properties of these particles. Neutrons directly emitted from atomic nuclei are termed as fast neutron.

Chadwick also explained the existence of isotopes. An isotope of an element has the same number of protons but different number of neutrons. It has, therefore, a different atomic weight. In 1935, Chadwick was awarded Nobel Prize for physics. Chadwick did pioneering work in the field of nuclear chain reactions. He played an important role in the development of the first atomic bomb during World War II.

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From the studies carried out on neutrons it has been found out that a free neutron which is outside a nucleus is unstable. On an average, a neutron decays in 12 minutes. This length of time is called half life of the neutron. Inside the nucleus, the neutrons are usually stable. When they decay inside the nucleus, that substance becomes radioactive. Beams of neutron shave high penetrating power and therefore they have high damaging effect on living tissues. Because of this, scientists working in nuclear establishments have to wear protective shields as a protection against harmful radiations.