NEUTRONS INTERATIONS

Neutron can cause many different interactions. 1. Simply scatter off the nucleus in two different ways 2. It may be absorbed into the nucleus.

> If ***neutron absorbed*** it may **result in 1 emission of a gamma ray** or 2 **subatomic particle** or 3 **cause the nucleus to fission**.

Scattering interaction between ***neutron*** and ***nucleus*** are

1. Elastic scattering
2. Inelastic scattering

The **law of conservation of energy** apply to an ***elastic collision*** between *neutron* and *nucleus*.

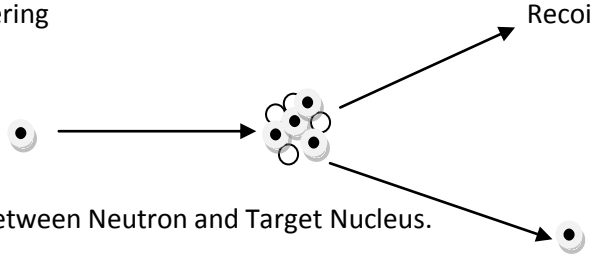
The **Reaction** takes place where a **neutron** is *absorbed* in **nucleus** are

1. Radioactive capture.

2. Particle ejection scattering.

A neutron scattering occurs when a neutron struck the nucleus and emits a single neutron. During this scattering the final and initial neutron need not be of same . The net effect of the reaction is as that of bounced off or scattered from the nucleus.

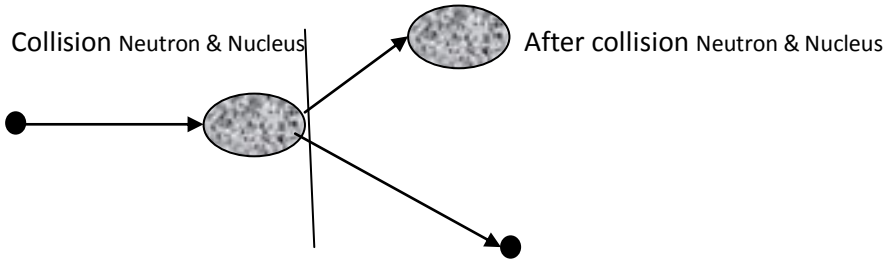
Elastic Scattering Recoil



Reaction is between Neutron and Target Nucleus.

Some Kinetic energy transferred usually from Neutron to the targeted Nucleus. No Energy transferred into nuclear excitation momentum and kinetic energy are conserved . The targeted nucleus gains the amount kinetic energy that neutron losses.

Before Collision Neutron & Nucleus After collision Neutron & Nucleus



Different interactions may caused by neutrons. ***Some neutron absorbed*** it may **result in 1 emission of a gamma ray** or 2 **subatomic particle** or 3 **cause the nucleus to fission,** It may lead to fission also and it is shown in the figure stating before collision and after collision

Light nuclei are most effective for slow neutrons. Neutron colliding with heavy nucleus rebounds with little loss of speed and with very little energy transferred in firing otherwise neutron will not be scattered by light electron clouds surrounding the nucleus but travel in straight .