INTRODUCTION

In atomic physics the interaction of atoms with electromagnetic radiation has been of paramount importance for the understanding of atomic structure.

In the case of nuclei, this interaction has not been so important a tool, since, unlike the atomic case, the wavelengths of interest are so short that they cannot be measured by the usual optical devices.

Both experimentalists and theoreticians found that the gamma quantum absorption cross section, generally exhibits defined peaks (giant resonances) with width of 4-8 Mev.

It was found ,also,that most of the giant resonances occur due to dipole transitions,i.e.,due to E1 -absorption.

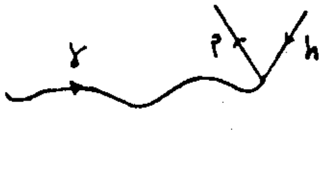
In closed shell light nuclei, the particle-hole model has been applied to predict energy positions and strengths of the photon absorption peaks in and above the giant resonance. The model has treated primarily the electric dipole (E1) and electric quadrupole (E2) interaction of a photon with a single hole-particle pair (1h-1p) and is increasingly being used to calculate the de-excitation of the giant resonance state and specifically the differential and total cross sections for (γ,p) and (γ-n) interactions.

The photoparticle angular distributions particularly provide sensitive test of a photonuclear model's wave functions through the sensitivity of the shape of the angular distributions to variations in the transition amplitudes of the nucleus excitations.(1)

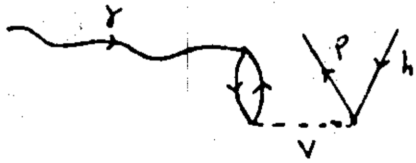
The giant resonance of carbon has been the subject of intensive study, especially by means of the (γ,n) and (γ,p) reactions.The major peak centered at 22.5 Mev.is predictable.

The absorption of a gamma-quanta leads to the creation of a p-h pair or the annihilation of a p-h pair,inittially present in the nucleus.

Using Feynman's technique these processes are represented by diagrams given in fig.(1,2).



creation of p-h pair
fig. (1)



annihilation of (p-h) pair
(with residual interaction v)
fig. (2)