

► Forbidden Transitions $\log_{10} f \tau_{1/2} \geq 6$

Angular momentum of the $e\nu$ pair relative to the nucleus $\ell > 0$.

$$e^{-i(\vec{p}+\vec{q})\cdot\vec{r}} = 1 - i(\vec{p}+\vec{q})\cdot\vec{r} - [(\vec{p}+\vec{q})\cdot\vec{r}]^2 - \dots$$

ℓ	0	1	2	...
$P=(-1)^\ell$	even	odd	even	...
	Allowed	1st forbidden	2nd forbidden	

Transition probabilities for large ℓ are small
 \Rightarrow **forbidden transitions.**

Forbidden transitions are only competitive if an allowed transition cannot occur (selection rules). The lowest permitted order of "forbiddenness" will dominate.

In general,

n^{th} forbidden \Rightarrow $e\nu$ system carries orbital angular momentum $\ell = n$, and $S_{e\nu} = 0$ (Fermi) or 1 (G-T).