The total Hamiltonian is of the form:

* The eigenstates of are with the corresponding eigenvalues
* The eigenstates of are with the corresponding eigenvalues

Therefore, the energies for the states and are and

Assuming an electrical field:

The dipole:

And the dipole contributed perturbation to the Hamiltonian we will be:

The states are of the form and:

In order to use Fermi's golden rule, we need to calculate the matrix element

Now, assuming the following states for representing spontaneous decay:

So:

(Using )

And therefore

And we want to calculate:

When assuming the states are orthogonal we get:

Now, we will look at the case when the dipole is only on the z axis:

And the electric field is: and

When

Then: