1(g). Parity

Parity relates to the symmetry of the wave function that represents the system. If the wave function is unchanged, when the coordinates (x, y, z) are replaced by $(-x, -y, -z)$ then the system has a parity of $+1$. If the wave function has its sign changed, when the coordinates are reversed, then the system has parity of -1.

If we write

$$\psi(x, y, z) = P\psi(-x, -y, -z)$$

we can regard P as a quantum number characterizing ψ whose possible values are $+1$ and -1.

It has been observed that spatial part of ψ of a particle does not change its sign on reflection if the angular momentum quantum number "l" is even.

As a general rule **Parity** $= (-1)^l$

For a system of particles Parity is even if $\sum l$ even and Parity is odd if $\sum l$ odd.