

Ω BARYONS

(S = -3, I = 0)

$$\Omega^- = sss$$

Ω⁻

$$I(J^P) = 0(\frac{3}{2}^+)$$

$J^P = \frac{3}{2}^+$ is the quark-model prediction; and $J = 3/2$ is fairly well established.

$$\text{Mass } m = 1672.45 \pm 0.29 \text{ MeV}$$

$$(m_{\Omega^-} - m_{\bar{\Omega}^+}) / m_{\Omega^-} = (-1 \pm 8) \times 10^{-5}$$

$$\text{Mean life } \tau = (0.821 \pm 0.011) \times 10^{-10} \text{ s}$$

$$c\tau = 2.461 \text{ cm}$$

$$(\tau_{\Omega^-} - \tau_{\bar{\Omega}^+}) / \tau_{\Omega^-} = 0.00 \pm 0.05$$

$$\text{Magnetic moment } \mu = -2.02 \pm 0.05 \mu_N$$

Decay parameters

$$\Lambda K^- \quad \alpha = 0.0180 \pm 0.0024$$

$$\Lambda K^-, \bar{\Lambda} K^+ \quad (\alpha + \bar{\alpha}) / (\alpha - \bar{\alpha}) = -0.02 \pm 0.13$$

$$\Xi^0 \pi^- \quad \alpha = 0.09 \pm 0.14$$

$$\Xi^- \pi^0 \quad \alpha = 0.05 \pm 0.21$$

Ω ⁻ DECAY MODES	Fraction (Γ _i /Γ)	Confidence level	^p (MeV/c)
ΛK ⁻	(67.8±0.7) %		211
Ξ ⁰ π ⁻	(23.6±0.7) %		294
Ξ ⁻ π ⁰	(8.6±0.4) %		289
Ξ ⁻ π ⁺ π ⁻	(4.3 ^{+3.4} _{-1.3}) × 10 ⁻⁴		189
Ξ(1530) ⁰ π ⁻	(6.4 ^{+5.0} _{-2.0}) × 10 ⁻⁴		17
Ξ ⁰ e ⁻ $\bar{\nu}_e$	(5.6±2.8) × 10 ⁻³		319
Ξ ⁻ γ	< 4.6 × 10 ⁻⁴	90%	314
ΔS = 2 forbidden (S2) modes			
Λπ ⁻	S2 < 2.9 × 10 ⁻⁶	90%	449

$\Omega(2250)^-$

$$I(J^P) = 0(??)$$

Mass $m = 2252 \pm 9$ MeV

Full width $\Gamma = 55 \pm 18$ MeV

$\Omega(2250)^-$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi^- \pi^+ K^-$	seen	532
$\Xi(1530)^0 K^-$	seen	437