

# $\Omega$ BARYONS ( $S = -3, I = 0$ )

$$\Omega^- = sss$$

$\Omega^-$

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

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

Mass  $m = 1672.45 \pm 0.29$  MeV

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

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

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

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

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

## Decay parameters

$$\alpha(\Omega^-) \alpha_-(\Lambda) \text{ FOR } \Omega^- \rightarrow \Lambda K^- = 0.0115 \pm 0.0015$$

$$\Lambda K^- \quad \alpha = 0.0157 \pm 0.0021$$

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

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

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

$\Omega^-$ DECAY MODES	Fraction ( $\Gamma_i/\Gamma$ )	Confidence level	$p$ (MeV/c)
$\Lambda K^-$	$(67.8 \pm 0.7) \%$		211
$\Xi^0 \pi^-$	$(23.6 \pm 0.7) \%$		294
$\Xi^- \pi^0$	$(8.6 \pm 0.4) \%$		289
$\Xi^- \pi^+ \pi^-$	$(3.7^{+0.7}_{-0.6}) \times 10^{-4}$		189
$\Xi(1530)^0 \pi^-$	$< 7 \times 10^{-5}$	90%	17
$\Xi^0 e^- \bar{\nu}_e$	$(5.6 \pm 2.8) \times 10^{-3}$		319
$\Xi^- \gamma$	$< 4.6 \times 10^{-4}$	90%	314
<b><math>\Delta S = 2</math> forbidden (S2) modes</b>			
$\Lambda \pi^-$	$S2 \quad < 2.9 \times 10^{-6}$	90%	449

$\Omega(2012)^-$

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

Mass  $m = 2012.4 \pm 0.9$  MeV

Full width  $\Gamma = 6.4^{+3.0}_{-2.6}$  MeV

$\Omega(2012)^-$ DECAY MODES	Fraction ( $\Gamma_i/\Gamma$ )	Confidence level	$p$ (MeV/c)
$\Xi^0 K^-$	<b>DEFINED AS 1</b>		403
$\Xi^- K^0$	$0.83 \pm 0.21$		392
$\Xi^0 \pi^0 K^-$	$<0.30$	90%	245
$\Xi^0 \pi^- \bar{K}^0$	$<0.21$	90%	230
$\Xi^- \pi^+ K^-$	$<0.08$	90%	224

 **$\Omega(2250)^-$** 

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

Mass  $m = 2252 \pm 9$  MeVFull width  $\Gamma = 55 \pm 18$  MeV

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