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

$\Omega^- = sss$

## $\Omega^-$

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

$J^P$ is not yet measured; $\frac{3}{2}^+$ is the quark model prediction.

Mass $m = 1672.45 \pm 0.29$ MeV
$(m_{\Omega^-} - m_{\overline{\Omega}^+}) \,/\, m_{\Omega^-} = (-1 \pm 8) \times 10^{-5}$
Mean life $\tau = (0.821 \pm 0.011) \times 10^{-10}$ s
$c\tau = 2.461$ cm
$(\tau_{\Omega^-} - \tau_{\overline{\Omega}^+}) \,/\, \tau_{\Omega^-} = -0.002 \pm 0.040$
Magnetic moment $\mu = -2.02 \pm 0.05\ \mu_N$

### Decay parameters

$\Lambda K^-$ $\quad \alpha = -0.026 \pm 0.023$
$\frac{1}{2}[\alpha(\Lambda K^-)+\alpha(\overline{\Lambda} K^+)] = -0.004 \pm 0.040$
$\Xi^0 \pi^-$ $\quad \alpha = 0.09 \pm 0.14$
$\Xi^- \pi^0$ $\quad \alpha = 0.05 \pm 0.21$

| **$\Omega^-$ 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 |
| $\Xi^- \pi^0$ | | $(8.6 \pm 0.4)$ % | | 290 |
| $\Xi^- \pi^+ \pi^-$ | | $(4.3^{+3.4}_{-1.3}) \times 10^{-4}$ | | 190 |
| $\Xi(1530)^0 \pi^-$ | | $(6.4^{+5.1}_{-2.0}) \times 10^{-4}$ | | 17 |
| $\Xi^0 e^- \overline{\nu}_e$ | | $(5.6 \pm 2.8) \times 10^{-3}$ | | 319 |
| $\Xi^- \gamma$ | | $< 4.6 \times 10^{-4}$ | 90% | 314 |
| **$\Delta S = 2$ forbidden ($S2$) modes** | | | | |
| $\Lambda \pi^-$ | $S2$ | $< 1.9 \times 10^{-4}$ | 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 $(\Gamma_i/\Gamma)$ | $p$ (MeV/$c$) |
|---|---|---|
| $\Xi^- \pi^+ K^-$ | seen | 531 |
| $\Xi(1530)^0 K^-$ | seen | 437 |