



$$I(J^P) = 0(\frac{1}{2}^+) \quad \text{Status: } ***$$

The quantum numbers have not been measured, but are simply assigned in accord with the quark model, in which the Ω_c^0 is the *ssc* ground state. No absolute branching fractions have been measured.

Ω_c^0 MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
2695.3 $\pm$ 0.4 OUR FIT				
2695.3 $\pm$ 0.4 OUR AVERAGE				
2695.28 $\pm$ 0.07 $\pm$ 0.41	9330	¹ AAIJ	24C LHCb	5.4fb ⁻¹ , <i>pp</i> at 13 TeV
2693.6 $\pm$ 0.3 $^{+1.8}_{-1.5}$	725	SOLOVIEVA	09 BELL	$\Omega^- \pi^+$ in $e^+ e^- \rightarrow \Upsilon(4S)$
2694.6 $\pm$ 2.6 $\pm$ 1.9	40	² CRONIN-HEN..01	CLE2	$e^+ e^- \approx 10.6$ GeV
2699.9 $\pm$ 1.5 $\pm$ 2.5	42	³ FRABETTI	94H E687	γ Be, $\overline{E}_\gamma = 221$ GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2705.9 $\pm$ 3.3 $\pm$ 2.0	10	⁴ FRABETTI	93 E687	γ Be, $\overline{E}_\gamma = 221$ GeV
2719.0 $\pm$ 7.0 $\pm$ 2.5	11	⁵ ALBRECHT	92H ARG	$e^+ e^- \approx 10.6$ GeV
2740 $\pm$ 20	3	BIAGI	85B SPEC	Σ^- Be 135 GeV/ <i>c</i>

¹ AAIJ 24C reports this measurements as 2695.28 $\pm$ 0.07 $\pm$ 0.27 $\pm$ 0.30 MeV. The last uncertainty is due to the uncertainty in the Ω^- mass. Also reported is $m_{\Omega_c^0} - m_{\Omega^-} = 1022.83 \pm 0.07 \pm 0.27$ MeV.

² CRONIN-HENNESSY 01 sees 40.4 $\pm$ 9.0 events in a sum over five channels.

³ FRABETTI 94H claims a signal of 42.5 $\pm$ 8.8 $\Sigma^+ K^- K^- \pi^+$ events. The background is about 24 events.

⁴ FRABETTI 93 claims a signal of 10.3 $\pm$ 3.9 $\Omega^- \pi^+$ events above a background of 5.8 events.

⁵ ALBRECHT 92H claims a signal of 11.5 $\pm$ 4.3 $\Xi^- K^- \pi^+ \pi^+$ events. The background is about 5 events.

Ω_c^0 MEAN LIFE

VALUE (10 ⁻¹⁵ s)	EVTS	DOCUMENT ID	TECN	COMMENT
273 $\pm$ 12 OUR AVERAGE				
243 $\pm$ 48 $\pm$ 11	88	ABUDINEN	23 BEL2	$e^+ e^- \rightarrow \Omega_c^0 + X$, $\Omega_c^0 \rightarrow \Omega^- \pi^+$
276.5 $\pm$ 13.4 $\pm$ 4.5		^{1,2} AAIJ	22Y LHCb	$pp \rightarrow \Omega_c X$, $\Omega_c \rightarrow$ $p K^- K^- \pi^+$
268 $\pm$ 24 $\pm$ 10	978	^{1,3} AAIJ	18J LHCb	$\Omega_b \rightarrow \Omega_c \mu \nu + X$, $\Omega_c \rightarrow$ $p K^- K^- \pi^+$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
72 $\pm$ 11 $\pm$ 11	64	LINK	03C FOCS	$\Omega^- \pi^+$, $\Xi^- K^- \pi^+ \pi^+$
55 $^{+13}_{-11}$ $^{+18}_{-23}$	86	ADAMOVICH	95B WA89	$\Omega^- \pi^- \pi^+ \pi^+$, $\Xi^- K^- \pi^+ \pi^+$

86 $\begin{smallmatrix} +27 \\ -20 \end{smallmatrix} \pm 28$ 25 FRABETTI 95D E687 $\Sigma^+ K^- K^- \pi^+$

¹ Recent measurements by AAIJ 18J, AAIJ 22Y, and ABUDINEN 23 obtain consistent results that are nearly four times larger than the average result of previous experiments, $(69 \pm 12) \times 10^{-15}$ s. We go with the more recent results, mostly obtained with much larger data samples, and also note the positive correlation between the measured value and the inverse of the estimated statistical uncertainty in lifetime measurements.

² AAIJ 22Y reports this measurement as $(276.5 \pm 13.4 \pm 4.4 \pm 0.7) \times 10^{-15}$ s. The last uncertainty is due to the uncertainty on the D^0 lifetime $\tau_{D^0} = (410.1 \pm 1.5)$ fs from PDG 20. Measured in Ω_c produced promptly in $p p$ collisions, using $D^0 \rightarrow K^+ K^- \pi^+ \pi^-$ as normalisation mode.

³ Measured using Ω_c produced in semileptonic Ω_b decays.

Ω_c^0 DECAY MODES

No absolute branching fractions have been measured. The following are branching *ratios* relative to $\Omega^- \pi^+$.

Mode	Fraction (Γ_i/Γ)	Confidence level
Cabibbo-favored ($S = -3$) decays — relative to $\Omega^- \pi^+$		
Γ_1 $\Omega^- \pi^+$	DEFINED AS 1	
Γ_2 $\Omega^- \pi^+ \pi^0$	1.80 ± 0.33	
Γ_3 $\Omega^- \rho^+$	>1.3	90%
Γ_4 $\Omega^- \pi^- 2\pi^+$	0.31 ± 0.05	
Γ_5 $\Omega^- e^+ \nu_e$	1.98 ± 0.29	
Γ_6 $\Omega^- \mu^+ \nu_\mu$	1.94 ± 0.21	
Γ_7 $\Xi^0 \bar{K}^0$	1.64 ± 0.29	
Γ_8 $\Xi^0 K^- \pi^+$	1.20 ± 0.18	
Γ_9 $\Xi^0 \bar{K}^{*0}, \bar{K}^{*0} \rightarrow K^- \pi^+$	0.68 ± 0.16	
Γ_{10} $\Omega(2012)^- \pi^+, \Omega(2012)^- \rightarrow \Xi^0 K^-$	0.12 ± 0.05	
Γ_{11} $\Xi^- \bar{K}^0 \pi^+$	2.12 ± 0.28	
Γ_{12} $\Omega(2012)^- \pi^+, \Omega(2012)^- \rightarrow \Xi^- \bar{K}^0$	0.12 ± 0.06	
Γ_{13} $\Xi^- K^- 2\pi^+$	0.63 ± 0.09	
Γ_{14} $\Xi(1530)^0 K^- \pi^+, \Xi^{*0} \rightarrow \Xi^- \bar{K}^{*0} \pi^+$	0.21 ± 0.06	
Γ_{15} $\Xi^- \bar{K}^{*0} \pi^+$	0.34 ± 0.11	
Γ_{16} $p K^- K^- \pi^+$	seen	
Γ_{17} $\Sigma^+ K^- K^- \pi^+$	<0.32	90%
Γ_{18} $\Lambda \bar{K}^0 \bar{K}^0$	1.72 ± 0.35	
Singly Cabibbo-suppressed modes — relative to $\Omega^- \pi^+$		
Γ_{19} $\Xi^- \pi^+$	0.161 ± 0.010	
Γ_{20} $\Omega^- K^+$	0.061 ± 0.006	
Doubly Cabibbo-suppressed modes — relative to $\Omega^- \pi^+$		
Γ_{21} $\Xi^- K^+$	<0.07	90%

Ω_c^0 BRANCHING RATIOS

A few early but now obsolete measurements have been omitted. See K.A. Olive, *et al.* (Particle Data Group), Chinese Physics **C38** 070001 (2014).

$\Gamma(\Omega^- \pi^+ \pi^0)/\Gamma(\Omega^- \pi^+)$

 Γ_2/Γ_1

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
1.80 ± 0.33 OUR AVERAGE		Error includes scale factor of 1.9.		
$2.00 \pm 0.17 \pm 0.11$	403	YELTON	18 BELL	$e^+ e^- \rightarrow \gamma(4S)$, +higher
$1.27 \pm 0.31 \pm 0.11$	64	AUBERT	07AH BABR	$e^+ e^- \approx \gamma(4S)$

$\Gamma(\Omega^- \rho^+)/\Gamma(\Omega^- \pi^+ \pi^0)$

 Γ_3/Γ_2

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
>0.71	90	¹ YELTON	18 BELL	$e^+ e^- \rightarrow \gamma(4S)$, +higher

¹ This submode fraction is evaluated from a background-subtracted signal in a mass plot. Result ignores interference effects and systematic uncertainties, which YELTON 18 claim are both small.

$\Gamma(\Omega^- \pi^- 2\pi^+)/\Gamma(\Omega^- \pi^+)$

 Γ_4/Γ_1

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.31 ± 0.05 OUR AVERAGE				
$0.32 \pm 0.05 \pm 0.02$	108	YELTON	18 BELL	$e^+ e^- \rightarrow \gamma(4S)$, +higher
$0.28 \pm 0.09 \pm 0.01$	25	AUBERT	07AH BABR	$e^+ e^- \approx \gamma(4S)$

$\Gamma(\Omega^- e^+ \nu_e)/\Gamma(\Omega^- \pi^+)$

 Γ_5/Γ_1

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
1.84 ± 0.32 OUR AVERAGE		Error includes scale factor of 2.3.		
$1.12 \pm 0.22 \pm 0.27$	232	¹ ACHARYA	24A ALCE	$p\bar{p}$ at 13 TeV
$1.98 \pm 0.13 \pm 0.08$		LI	22A BELL	$e^+ e^-$ at $\gamma(nS)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$2.4 \pm 1.1 \pm 0.2$	11	² AMMAR	02 CLE2	$e^+ e^- \approx \gamma(4S)$

¹ ACHARYA 24A measurement performed over p_T intervals in the range $2 < p_T < 12$ GeV, from which a p_T -independent branching ratio is derived from a weighted average over p_T .

² AMMAR 02 reported $0.41 \pm 0.19 \pm 0.04$ for the inverse of this branching fraction.

$\Gamma(\Omega^- \mu^+ \nu_\mu)/\Gamma(\Omega^- \pi^+)$

 Γ_6/Γ_1

VALUE	DOCUMENT ID	TECN	COMMENT
$1.94 \pm 0.18 \pm 0.10$	LI	22A BELL	$e^+ e^-$ at $\gamma(nS)$

$\Gamma(\Omega^- e^+ \nu_e)/\Gamma(\Omega^- \mu^+ \nu_\mu)$

 Γ_5/Γ_6

VALUE	DOCUMENT ID	TECN	COMMENT
$1.02 \pm 0.10 \pm 0.02$	LI	22A BELL	$e^+ e^-$ at $\gamma(nS)$

$\Gamma(\Xi^0 \bar{K}^0)/\Gamma(\Omega^- \pi^+)$

 Γ_7/Γ_1

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
$1.64 \pm 0.26 \pm 0.12$	98	YELTON	18 BELL	$e^+ e^- \rightarrow \gamma(4S)$, +higher

$\Gamma(\Xi^0 K^- \pi^+)/\Gamma(\Omega^- \pi^+)$

 Γ_8/Γ_1

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
$1.20 \pm 0.16 \pm 0.08$	168	YELTON	18 BELL	$e^+ e^- \rightarrow \gamma(4S)$, +higher

$$\Gamma(\Xi^0 \bar{K}^{*0}, \bar{K}^{*0} \rightarrow K^- \pi^+)/\Gamma(\Xi^0 K^- \pi^+) \quad \Gamma_9/\Gamma_8$$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.57±0.10	95	¹ YELTON	18	BELL $e^+e^- \rightarrow \Upsilon(4S)$, +higher

¹ This submode fraction is evaluated from a background-subtracted signal in a mass plot. Result ignores interference effects and systematic uncertainties, which YELTON 18 claim are both small.

$$\Gamma(\Omega(2012)^- \pi^+, \Omega(2012)^- \rightarrow \Xi^0 K^-)/\Gamma(\Xi^0 K^- \pi^+) \quad \Gamma_{10}/\Gamma_8$$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID	TECN	COMMENT
9.6±3.2±1.8	28	¹ LI	21D	BELL e^+e^- at $\Upsilon(nS)$

¹ LI 21D reports the significance of the $\Omega(2012)$ signal is 4.2σ including systematic uncertainties. Also measures $B(\Omega_c^0 \rightarrow \Omega(2012)^- \pi^+, \Omega(2012)^- \rightarrow (\bar{K}\Xi)^-)/B(\Omega_c^0 \rightarrow \Xi^0 K^- \pi^+) = 0.220 \pm 0.059 \pm 0.035$.

$$\Gamma(\Xi^- \bar{K}^0 \pi^+)/\Gamma(\Omega^- \pi^+) \quad \Gamma_{11}/\Gamma_1$$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
2.12±0.24±0.14	349	YELTON	18	BELL $e^+e^- \rightarrow \Upsilon(4S)$, +higher

$$\Gamma(\Omega(2012)^- \pi^+, \Omega(2012)^- \rightarrow \Xi^- \bar{K}^0)/\Gamma(\Xi^- \bar{K}^0 \pi^+) \quad \Gamma_{12}/\Gamma_{11}$$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID	TECN	COMMENT
5.5±2.8±0.7	18	¹ LI	21D	BELL e^+e^- at $\Upsilon(nS)$

¹ LI 21D reports the significance of the $\Omega(2012)$ signal is 4.2σ including systematic uncertainties. Also measures $B(\Omega_c^0 \rightarrow \Omega(2012)^- \pi^+, \Omega(2012)^- \rightarrow (\bar{K}\Xi)^-)/B(\Omega_c^0 \rightarrow \Xi^0 K^- \pi^+) = 0.220 \pm 0.059 \pm 0.035$.

$$\Gamma(\Xi^- K^- 2\pi^+)/\Gamma(\Omega^- \pi^+) \quad \Gamma_{13}/\Gamma_1$$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.63±0.09 OUR AVERAGE		Error includes scale factor of 1.4.		
0.68±0.07±0.03	278	YELTON	18	BELL $e^+e^- \rightarrow \Upsilon(4S)$, +higher
0.46±0.13±0.03	45	AUBERT	07AH BABR	$e^+e^- \approx \Upsilon(4S)$

$$\Gamma(\Xi(1530)^0 K^- \pi^+, \Xi^{*0} \rightarrow \Xi^- \pi^+)/\Gamma(\Xi^- K^- 2\pi^+) \quad \Gamma_{14}/\Gamma_{13}$$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.33±0.09	74	¹ YELTON	18	BELL $e^+e^- \rightarrow \Upsilon(4S)$, +higher

¹ This submode fraction is evaluated from a background-subtracted signal in a mass plot. Result ignores interference effects and systematic uncertainties, which YELTON 18 claim are both small.

$$\Gamma(\Xi^- \bar{K}^{*0} \pi^+)/\Gamma(\Xi^- K^- 2\pi^+) \quad \Gamma_{15}/\Gamma_{13}$$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.55±0.16	136	¹ YELTON	18	BELL $e^+e^- \rightarrow \Upsilon(4S)$, +higher

¹ This submode fraction is evaluated from a background-subtracted signal in a mass plot. Result ignores interference effects and systematic uncertainties, which YELTON 18 claim are both small.

$$\Gamma(p K^- K^- \pi^+)/\Gamma_{\text{total}} \quad \Gamma_{16}/\Gamma$$

VALUE	DOCUMENT ID	TECN	COMMENT
seen	AAIJ	160	LHCB pp at 7, 8 TeV

$\Gamma(\Sigma^+ K^- K^- \pi^+)/\Gamma(\Omega^- \pi^+)$ Γ_{17}/Γ_1

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
<0.32	90	17	YELTON	18	BELL $e^+e^- \rightarrow \Upsilon(4S)$, +higher

 $\Gamma(\Lambda \bar{K}^0 \bar{K}^0)/\Gamma(\Omega^- \pi^+)$ Γ_{18}/Γ_1

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
$1.72 \pm 0.32 \pm 0.14$	95	YELTON	18	BELL $e^+e^- \rightarrow \Upsilon(4S)$, +higher

 $\Gamma(\Xi^- \pi^+)/\Gamma(\Omega^- \pi^+)$ Γ_{19}/Γ_1

VALUE (units 10^{-2})	EVTS	DOCUMENT ID	TECN	COMMENT
16.1 ± 1.0 OUR AVERAGE				
$15.81 \pm 0.87 \pm 0.47$	2780	¹ AAIJ	24C	LHCB 5.4fb^{-1} , pp at 13 TeV
$25.3 \pm 5.2 \pm 3.0$	208	HAN	23	BELL $e^+e^- \rightarrow \Upsilon(nS)$

¹AAIJ 24C reports this measurements as $(15.81 \pm 0.87 \pm 0.44 \pm 0.16)\%$. The last uncertainty is due to branching ratios of $\Omega^- \rightarrow \Lambda K^-$ and $\Xi^- \rightarrow \Lambda \pi^-$ decays taken as external inputs, which are taken to be $67.8 \pm 0.7\%$ and $99.887 \pm 0.035\%$, respectively.

 $\Gamma(\Omega^- K^+)/\Gamma(\Omega^- \pi^+)$ Γ_{20}/Γ_1

VALUE (units 10^{-2})	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
$6.08 \pm 0.51 \pm 0.40$		425	AAIJ	24C	LHCB 5.4fb^{-1} , pp at 13 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<29	90	HAN	23	BELL	$e^+e^- \rightarrow \Upsilon(nS)$

 $\Gamma(\Xi^- K^+)/\Gamma(\Omega^- \pi^+)$ Γ_{21}/Γ_1

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.070	90	HAN	23	BELL $e^+e^- \rightarrow \Upsilon(nS)$

 Ω_c^0 REFERENCES

AAIJ	24C	PRL 132 081802	R. Aaij <i>et al.</i>	(LHCb Collab.)
ACHARYA	24A	PR D110 032014	S. Acharya <i>et al.</i>	(ALICE Collab.)
ABUDINEN	23	PR D107 L031103	F. Abudinen <i>et al.</i>	(BELLE II Collab.)
HAN	23	JHEP 2301 055	X. Han <i>et al.</i>	(BELLE Collab.)
AAIJ	22Y	SCIB 67 479	R. Aaij <i>et al.</i>	(LHCb Collab.)
LI	22A	PR D105 L091101	Y.B. Li <i>et al.</i>	(BELLE Collab.)
LI	21D	PR D104 052005	Y.B. Li <i>et al.</i>	(BELLE Collab.)
PDG	20	PTEP 2020 083C01	P.A. Zyla <i>et al.</i>	(PDG Collab.)
AAIJ	18J	PRL 121 092003	R. Aaij <i>et al.</i>	(LHCb Collab.)
YELTON	18	PR D97 032001	J. Yelton <i>et al.</i>	(BELLE Collab.)
AAIJ	16O	PR D93 092007	R. Aaij <i>et al.</i>	(LHCb Collab.)
PDG	14	CP C38 070001	K. Olive <i>et al.</i>	(PDG Collab.)
SOLOVIEVA	09	PL B672 1	E. Solovieva <i>et al.</i>	(BELLE Collab.)
AUBERT	07AH	PRL 99 062001	B. Aubert <i>et al.</i>	(BABAR Collab.)
LINK	03C	PL B561 41	J.M. Link <i>et al.</i>	(FNAL FOCUS Collab.)
AMMAR	02	PRL 89 171803	R. Ammar <i>et al.</i>	(CLEO Collab.)
CRONIN-HEN...	01	PRL 86 3730	D. Cronin-Hennessy <i>et al.</i>	(CLEO Collab.)
ADAMOVICH	95B	PL B358 151	M.I. Adamovich <i>et al.</i>	(CERN WA89 Collab.)
FRABETTI	95D	PL B357 678	P.L. Frabetti <i>et al.</i>	(FNAL E687 Collab.)
FRABETTI	94H	PL B338 106	P.L. Frabetti <i>et al.</i>	(FNAL E687 Collab.)
FRABETTI	93	PL B300 190	P.L. Frabetti <i>et al.</i>	(FNAL E687 Collab.)
ALBRECHT	92H	PL B288 367	H. Albrecht <i>et al.</i>	(ARGUS Collab.)
BIAGI	85B	ZPHY C28 175	S.F. Biagi <i>et al.</i>	(CERN WA62 Collab.)