

$$D_{s0}^*(2317)^\pm$$

$$I(J^P) = 0(0^+)^\pm$$

J, P need confirmation.

AUBERT 06P does not observe neutral and doubly charged partners of the $D_{s0}^*(2317)^\pm$.

$D_{s0}^*(2317)^\pm$ MASS

The fit includes $D^\pm, D^0, D_s^\pm, D^{*\pm}, D^{*0}, D_s^{*\pm}, D_1(2420)^0, D_2^*(2460)^0$, and $D_{s1}(2536)^\pm$ mass and mass difference measurements.

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
2317.7±0.6 OUR FIT	Error includes scale factor of 1.1.			
2318.0±1.0 OUR AVERAGE	Error includes scale factor of 1.4.			
2319.6±0.2±1.4	3180	AUBERT	06P BABR	10.6 $e^+ e^- \rightarrow D_s^+ \pi^0 X$
2317.3±0.4±0.8	1022	¹ AUBERT	04E BABR	10.6 $e^+ e^-$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
2317.2±1.3	88	² AUBERT,B	04S BABR	$B \rightarrow D_{s0}^{(*)}(2317)^+ \bar{D}^{(*)}$
2317.2±0.5±0.9	761	³ MIKAMI	04 BELL	10.6 $e^+ e^-$
2316.8±0.4±3.0	1267 ± 53	^{3,4} AUBERT	03G BABR	10.6 $e^+ e^-$
2317.6±1.3	273 ± 33	^{3,5} AUBERT	03G BABR	10.6 $e^+ e^-$
2319.8±2.1±2.0	24	³ KROKOVNY	03B BELL	10.6 $e^+ e^-$

¹ Supersedes AUBERT 03G.

² Systematic errors not evaluated.

³ Not independent of the corresponding $m_{D_{s0}^*(2317)} - m_{D_s}$.

⁴ From $D_s^+ \rightarrow K^+ K^- \pi^+$ decay.

⁵ From $D_s^+ \rightarrow K^+ K^- \pi^+ \pi^0$ decay.

$m_{D_{s0}^*(2317)^\pm} - m_{D_s^\pm}$

The fit includes $D^\pm, D^0, D_s^\pm, D^{*\pm}, D^{*0}, D_s^{*\pm}, D_1(2420)^0, D_2^*(2460)^0$, and $D_{s1}(2536)^\pm$ mass and mass difference measurements.

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
349.4±0.6 OUR FIT	Error includes scale factor of 1.1.			
349.2±0.7 OUR AVERAGE				
348.7±0.5±0.7	761	MIKAMI	04 BELL	10.6 $e^+ e^-$
350.0±1.2±1.0	135	BESSION	03 CLE2	10.6 $e^+ e^-$
351.3±2.1±1.9	24	⁶ KROKOVNY	03B BELL	10.6 $e^+ e^-$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
349.6±0.4±3.0	1267	^{7,8} AUBERT	03G BABR	10.6 $e^+ e^-$
350.2±1.3	273	^{9,10} AUBERT	03G BABR	10.6 $e^+ e^-$

⁶ Recalculated by us using $m_{D_s^+} = 1968.5 \pm 0.6$ MeV.

⁷ From $D_s^+ \rightarrow K^+ K^- \pi^+$ decay.

⁸ Recalculated by us using $m_{D_s^+} = 1967.20 \pm 0.03$ MeV.

⁹ From $D_s^+ \rightarrow K^+ K^- \pi^+ \pi^0$ decay.

¹⁰ Recalculated by us using $m_{D_s^+} = 1967.4 \pm 0.2$ MeV. Systematic errors not estimated.

$D_{s0}^*(2317)^\pm$ WIDTH

VALUE (MeV)	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
< 3.8	95	3180	AUBERT	06P BABR	$10.6 e^+ e^- \rightarrow D_s^+ \pi^0 X$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●					
< 4.6	90	761	MIKAMI	04 BELL	$10.6 e^+ e^-$
< 10			AUBERT	03G BABR	$10.6 e^+ e^-$
< 7	90	135	BESSION	03 CLE2	$10.6 e^+ e^-$

$D_{s0}^*(2317)^\pm$ DECAY MODES

$D_{s0}^*(2317)^-$ modes are charge conjugates of modes below.

Mode	Fraction (Γ_i/Γ)
Γ_1 $D_s^+ \pi^0$	seen
Γ_2 $D_s^+ \gamma$	
Γ_3 $D_s^*(2112)^+ \gamma$	
Γ_4 $D_s^+ \gamma \gamma$	
Γ_5 $D_s^*(2112)^+ \pi^0$	
Γ_6 $D_s^+ \pi^+ \pi^-$	
Γ_7 $D_s^+ \pi^0 \pi^0$	not seen

$D_{s0}^*(2317)^\pm$ BRANCHING RATIOS

$\Gamma(D_s^+ \pi^0)/\Gamma_{\text{total}}$	Γ_1/Γ			
VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
seen	1540 ± 62	AUBERT	03G BABR	$10.6 e^+ e^-$

$\Gamma(D_s^+ \gamma)/\Gamma(D_s^+ \pi^0)$	Γ_2/Γ_1			
VALUE	CL%	DOCUMENT ID	TECN	COMMENT
< 0.05	90	MIKAMI	04 BELL	$10.6 e^+ e^-$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
< 0.14	95	AUBERT	06P BABR	$10.6 e^+ e^-$
< 0.052	90	BESSION	03 CLE2	$10.6 e^+ e^-$

$\Gamma(D_s^*(2112)^+\gamma)/\Gamma(D_s^+\pi^0)$ Γ_3/Γ_1

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<0.059	90	BESSION	03	CLE2 10.6 e ⁺ e ⁻
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
<0.16	95	AUBERT	06P	BABR 10.6 e ⁺ e ⁻
<0.18	90	MIKAMI	04	BELL 10.6 e ⁺ e ⁻

$\Gamma(D_s^+\gamma\gamma)/\Gamma(D_s^+\pi^0)$ Γ_4/Γ_1

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<0.18	95	AUBERT	06P	BABR 10.6 e ⁺ e ⁻
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
not seen		AUBERT	03G	BABR 10.6 e ⁺ e ⁻

$\Gamma(D_s^*(2112)^+\pi^0)/\Gamma(D_s^+\pi^0)$ Γ_5/Γ_1

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<0.11	90	BESSION	03	CLE2 10.6 e ⁺ e ⁻

$\Gamma(D_s^+\pi^+\pi^-)/\Gamma(D_s^+\pi^0)$ Γ_6/Γ_1

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<0.004	90	MIKAMI	04	BELL 10.6 e ⁺ e ⁻
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
<0.005	95	AUBERT	06P	BABR 10.6 e ⁺ e ⁻
<0.019	90	BESSION	03	CLE2 10.6 e ⁺ e ⁻

$\Gamma(D_s^+\pi^0\pi^0)/\Gamma(D_s^+\pi^0)$ Γ_7/Γ_1

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<0.25	95	AUBERT	06P	BABR 10.6 e ⁺ e ⁻

$D_{s0}^*(2317)^\pm$ REFERENCES

AUBERT	06P	PR D74 032007	B. Aubert <i>et al.</i>	(BABAR Collab.)
AUBERT	04E	PR D69 031101	B. Aubert <i>et al.</i>	(BABAR Collab.)
AUBERT,B	04S	PRL 93 181801	B. Aubert <i>et al.</i>	(BABAR Collab.)
MIKAMI	04	PRL 92 012002	Y. Mikami <i>et al.</i>	(BELLE Collab.)
AUBERT	03G	PRL 90 242001	B. Aubert <i>et al.</i>	(BABAR Collab.)
BESSION	03	PR D68 032002	D. Besson <i>et al.</i>	(CLEO Collab.)
KROKOVNY	03B	PRL 91 262002	P. Krokovny <i>et al.</i>	(BELLE Collab.)