$D_2^*(2460)^0$

$I(J^P) = \frac{1}{2}(2^+)$

$J^P = 2^+$ assignment strongly favored(ALBRECHT 89B).

$D_2^*(2460)0$ 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
2462.8±1.0 OUR FIT	Error includes scale factor of 1.5.				
2460.9±1.3 OUR AVERAGE	Error includes scale factor of 1.2.				
2460.4±1.2±2.2	3.4k		AUBERT	09AB BABR	$B^- \to D^+\pi^-\pi^-$
2461.6±2.1±3.3		[1] ABE		04D BELL	$B^- \to D^+\pi^-\pi^-$
2464.5±1.1±1.9	5.8k	[1] LINK		04A FOCS	γA
2465 ±3 ±3	486		AVERY	94C CLE2	$e^+e^- \to D^+\pi^- X$
2453 ±3 ±2	128		FRABETTI	94B E687	$\gamma Be \to D^+\pi^- X$
2461 ±3 ±1	440		AVERY	90 CLEO	$e^+e^- \to D^{*+}\pi^- X$
2455 ±3 ±5	337		ALBRECHT	89B ARG	$e^+e^- \to D^+\pi^- X$
2459 ±3 ±2	153		ANJOS	89C TPS	$\gamma N \to D^+\pi^- X$

• • • We do not use the following data for averages, fits, limits, etc. • • •

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
$2469.1\pm3.7^{+1.2}_{-1.3}$	1560 ±230	[2] CHEKANOV		09 ZEUS	$e^{\pm}p \to D^{(*)+}\pi^- X$
2463.3±0.6±0.8	20k		ABULENCIA	06A CDF	1900 $p\overline{p} \to D^+\pi^- X$
2461 ±6	126	[3] ABREU		98M DLPH	e^+e^-
2466 ±7	1		ASRATYAN	95 BEBC	53,40 $\nu(\overline{\nu}) \to pX, dX$

[1] Fit includes the contribution from $D_0^*(2400)^0$.

[2] Calculated using the mass difference $m(D_2^{*0}) - m(D^{*+})_{PDG}$ reported below and $m(D^{*+})_{PDG} = 2010.27 \pm 0.17$ MeV. The 0.17 MeV uncertainty of the PDG mass value should be added to the experimental uncertainty of $^{+1.2}_{-1.3}$ MeV.

[3] No systematic error given.

$m_{D_2^{*0}} - m_{D^+}$

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.

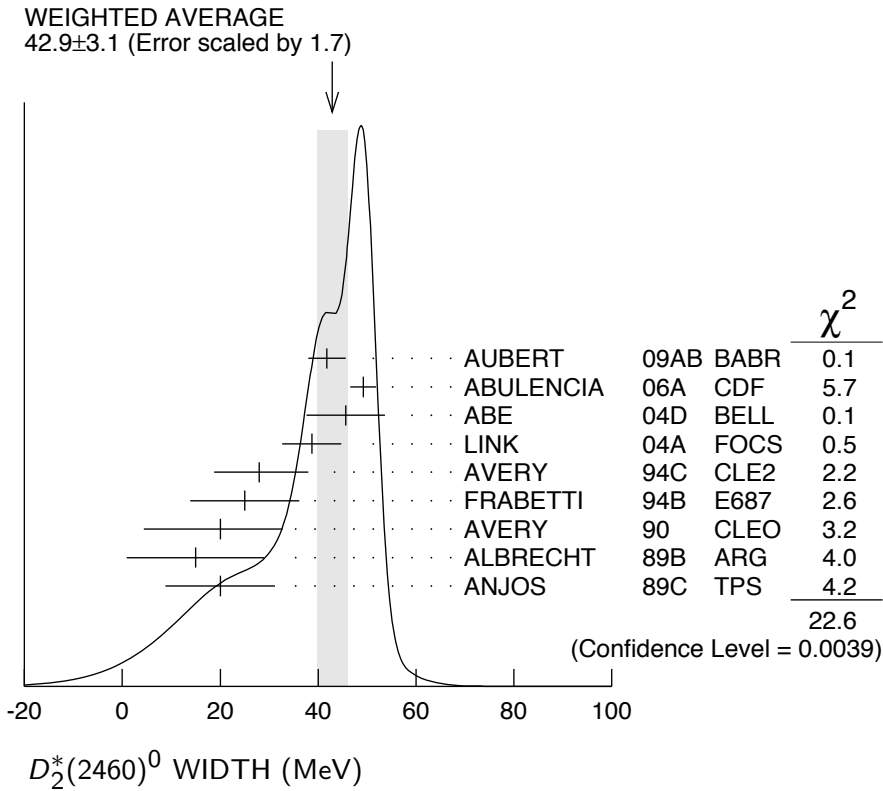| VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
593.2±1.0 OUR FIT	Error includes scale factor of 1.5.			
593.9±0.6±0.5	20k	ABULENCIA	06A CDF	1900 $p\overline{p} \to D^+\pi^- X$

$$m_{D_2^{*0}} - m_{D^{*+}}$$

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
452.6±1.0 OUR FIT Error includes scale factor of 1.5.				
458.8±3.7$^{+1.2}_{-1.3}$	1560 ± 230	CHEKANOV 09	ZEUS	$e^{\pm} p \rightarrow D^{(*)+} \pi^- X$

$D_2^*(2460)^0$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
42.9± 3.1 OUR AVERAGE Error includes scale factor of 1.7. See the ideogram below.				
41.8± 2.5± 2.9	3.4k	AUBERT 09AB	BABR	$B^- \rightarrow D^+ \pi^- \pi^-$
49.2± 2.3± 1.3	20k	ABULENCIA 06A	CDF	1900 $p\overline{p} \rightarrow D^+ \pi^- X$
45.6± 4.4± 6.7		[4] ABE 04D	BELL	$B^- \rightarrow D^+ \pi^- \pi^-$
38.7± 5.3± 2.9	5.8k	[4] LINK 04A	FOCS	γ A
28 $^{+8}_{-7}$ ± 6	486	AVERY 94C	CLE2	$e^+ e^- \rightarrow D^+ \pi^- X$
25 ±10 ± 5	128	FRABETTI 94B	E687	γ Be $\rightarrow D^+ \pi^- X$
20 $^{+9}_{-12}$ $^{+9}_{-10}$	440	AVERY 90	CLEO	$e^+ e^- \rightarrow D^{*+} \pi^- X$
15 $^{+13}_{-10}$ $^{+5}_{-10}$	337	ALBRECHT 89B	ARG	$e^+ e^- \rightarrow D^+ \pi^- X$
20 ±10 ± 5	153	ANJOS 89C	TPS	$\gamma N \rightarrow D^+ \pi^- X$

[4] Fit includes the contribution from $D_0^*(2400)^0$.

WEIGHTED AVERAGE
42.9±3.1 (Error scaled by 1.7)

			χ^2
AUBERT	09AB	BABR	0.1
ABULENCIA	06A	CDF	5.7
ABE	04D	BELL	0.1
LINK	04A	FOCS	0.5
AVERY	94C	CLE2	2.2
FRABETTI	94B	E687	2.6
AVERY	90	CLEO	3.2
ALBRECHT	89B	ARG	4.0
ANJOS	89C	TPS	4.2
			22.6

(Confidence Level = 0.0039)

-20   0   20   40   60   80   100

$D_2^*(2460)^0$ WIDTH (MeV)

$D_2^*(2460)^0$ DECAY MODES

$\overline{D}_2^*(2460)^0$ modes are charge conjugates of modes below.

	Mode	Fraction (Γ_i/Γ)
Γ_1	$D^+\pi^-$	seen
Γ_2	$D^*(2010)^+\pi^-$	seen
Γ_3	$D^0\pi^+\pi^-$	not seen
Γ_4	$D^{*0}\pi^+\pi^-$	not seen

$D_2^*(2460)^0$ BRANCHING RATIOS

$\Gamma(D^+\pi^-)/\Gamma_{total}$ $\qquad\qquad\qquad\qquad\qquad\qquad$ Γ_1/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
seen	3.4k	AUBERT	09AB	BABR	$B^- \to D^+\pi^-\pi^-$
seen	337	ALBRECHT	89B	ARG	$e^+e^- \to D^+\pi^- X$
seen		ANJOS	89C	TPS	$\gamma N \to D^+\pi^- X$

$\Gamma(D^*(2010)^+\pi^-)/\Gamma_{total}$ $\qquad\qquad\qquad\qquad\qquad$ Γ_2/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
seen	ACKERSTAFF	97W	OPAL	$e^+e^- \to D^{*+}\pi^- X$
seen	AVERY	90	CLEO	$e^+e^- \to D^{*+}\pi^- X$
seen	ALBRECHT	89H	ARG	$e^+e^- \to D^*\pi^- X$

$\Gamma(D^+\pi^-)/\Gamma(D^*(2010)^+\pi^-)$ $\qquad\qquad$ Γ_1/Γ_2

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
2.4±0.5 OUR AVERAGE					
$2.8\pm0.8^{+0.5}_{-0.6}$	1560 ± 230	CHEKANOV	09	ZEUS	$e^{\pm}p \to D^{(*)+}\pi^- X$
$2.2\pm0.7\pm0.6$		AVERY	94C	CLE2	$e^+e^- \to D^{*+}\pi^- X$
2.3 ± 0.8		AVERY	90	CLEO	e^+e^-
$3.0\pm1.1\pm1.5$		ALBRECHT	89H	ARG	$e^+e^- \to D^*\pi^- X$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.9 ± 0.5		ABE	04D	BELL	$B^- \to D^{(*)+}\pi^-\pi^-$

$\Gamma(D^+\pi^-)/[\Gamma(D^+\pi^-)+\Gamma(D^*(2010)^+\pi^-)]$ $\qquad$ $\Gamma_1/(\Gamma_1+\Gamma_2)$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.62\pm0.03\pm0.02$	8414	[5] AUBERT	09Y	BABR	$B^+ \to D_2^{*0}\ell^+\nu_\ell$

[5] Assuming $\Gamma(\Upsilon(4S) \to B^+B^-) / \Gamma(\Upsilon(4S) \to B^0\overline{B}^0) = 1.065 \pm 0.026$ and equal partial widths for charged and neutral D_2^* mesons.

$D_2^*(2460)^0$ REFERENCES

AUBERT	09AB	PR D79 112004	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	09Y	PRL 103 051803	B. Aubert *et al.*	(BABAR Collab.)
CHEKANOV	09	EPJ C60 25	S. Chekanov *et al.*	(ZEUS Collab.)
ABULENCIA	06A	PR D73 051104	A. Abulencia *et al.*	(CDF Collab.)
ABE	04D	PR D69 112002	K. Abe *et al.*	(BELLE Collab.)
LINK	04A	PL B586 11	J.M. Link *et al.*	(FOCUS Collab.)
ABREU	98M	PL B426 231	P. Abreu *et al.*	(DELPHI Collab.)
ACKERSTAFF	97W	ZPHY C76 425	K. Ackerstaff *et al.*	(OPAL Collab.)
ASRATYAN	95	ZPHY C68 43	A.E. Asratyan *et al.*	(BIRM, BELG, CERN+)
AVERY	94C	PL B331 236	P. Avery *et al.*	(CLEO Collab.)
FRABETTI	94B	PRL 72 324	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
AVERY	90	PR D41 774	P. Avery, D. Besson	(CLEO Collab.)
ALBRECHT	89B	PL B221 422	H. Albrecht *et al.*	(ARGUS Collab.) JP
ALBRECHT	89H	PL B232 398	H. Albrecht *et al.*	(ARGUS Collab.) JP
ANJOS	89C	PRL 62 1717	J.C. Anjos *et al.*	(FNAL E691 Collab.)