

**$D_1(2420)^0$** 

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

$I, J, P$  need confirmation.

Seen in  $D^*(2010)^+ \pi^-$ .  $J^P = 1^+$  according to ALBRECHT 89H. **$D_1(2420)^0$  MASS**

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>2422.3 ± 1.3 OUR AVERAGE</b>		Error includes scale factor of 1.2.		
2426 ± 3 ± 1	151	ABE	05A	BELL $B^- \rightarrow D^0 \pi^+ \pi^- \pi^-$
2421.4 ± 1.5 ± 0.9		<sup>1</sup> ABE	04D	BELL $B^- \rightarrow D^{*+} \pi^- \pi^-$
2421 $\begin{smallmatrix} +1 \\ -2 \end{smallmatrix}$ ± 2	286	AVERY	94C	CLE2 $e^+ e^- \rightarrow D^{*+} \pi^- X$
2422 ± 2 ± 2	51	FRABETTI	94B	E687 $\gamma \text{Be} \rightarrow D^{*+} \pi^- X$
2428 ± 3 ± 2	279	AVERY	90	CLEO $e^+ e^- \rightarrow D^{*+} \pi^- X$
2414 ± 2 ± 5	171	ALBRECHT	89H	ARG $e^+ e^- \rightarrow D^{*+} \pi^- X$
2428 ± 8 ± 5	171	ANJOS	89C	TPS $\gamma N \rightarrow D^{*+} \pi^- X$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
2421.7 ± 0.7 ± 0.6	7.5k	ABULENCIA	06A	CDF 1900 $p \bar{p} \rightarrow D^{*+} \pi^- X$
2425 ± 3	235	<sup>2</sup> ABREU	98M	DLPH $e^+ e^-$
<sup>1</sup> Fit includes the contribution from $D_1^*(2430)^0$ .				
<sup>2</sup> No systematic error given.				

 **$m_{D_1^0} - m_{D^{*+}}$** 

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>411.7 ± 0.7 ± 0.4</b>	7.5k	ABULENCIA	06A	CDF 1900 $p \bar{p} \rightarrow D^{*+} \pi^- X$

 **$D_1(2420)^0$  WIDTH**

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>20.4 ± 1.7 OUR AVERAGE</b>				
20.0 ± 1.7 ± 1.3	7.5k	ABULENCIA	06A	CDF 1900 $p \bar{p} \rightarrow D^{*+} \pi^- X$
24 ± 7 ± 8	151	ABE	05A	BELL $B^- \rightarrow D^0 \pi^+ \pi^- \pi^-$
23.7 ± 2.7 ± 4.0		<sup>3</sup> ABE	04D	BELL $B^- \rightarrow D^{*+} \pi^- \pi^-$
20 $\begin{smallmatrix} +6 \\ -5 \end{smallmatrix}$ ± 3	286	AVERY	94C	CLE2 $e^+ e^- \rightarrow D^{*+} \pi^- X$
15 ± 8 ± 4	51	FRABETTI	94B	E687 $\gamma \text{Be} \rightarrow D^{*+} \pi^- X$
23 $\begin{smallmatrix} +8 & +10 \\ -6 & -3 \end{smallmatrix}$	279	AVERY	90	CLEO $e^+ e^- \rightarrow D^{*+} \pi^- X$
13 ± 6 $\begin{smallmatrix} +10 \\ -5 \end{smallmatrix}$	171	ALBRECHT	89H	ARG $e^+ e^- \rightarrow D^{*+} \pi^- X$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
58 ± 14 ± 10	171	ANJOS	89C	TPS $\gamma N \rightarrow D^{*+} \pi^- X$
<sup>3</sup> Fit includes the contribution from $D_1^*(2430)^0$ .				

**$D_1(2420)^0$  DECAY MODES** $\bar{D}_1(2420)^0$  modes are charge conjugates of modes below.

Mode	Fraction ( $\Gamma_i/\Gamma$ )
$\Gamma_1$ $D^*(2010)^+ \pi^-$	seen
$\Gamma_2$ $D^0 \pi^+ \pi^-$	seen
$\Gamma_3$ $D^0 \rho^0$	
$\Gamma_4$ $D^0 f_0(600)$	
$\Gamma_5$ $D_0^*(2400)^+ \pi^-$	
$\Gamma_6$ $D^+ \pi^-$	not seen
$\Gamma_7$ $D^{*0} \pi^+ \pi^-$	not seen

 **$D_1(2420)^0$  BRANCHING RATIOS**

$\Gamma(D^*(2010)^+ \pi^-)/\Gamma_{\text{total}}$				$\Gamma_1/\Gamma$
VALUE	DOCUMENT ID	TECN	COMMENT	
seen	ACKERSTAFF 97W	OPAL	$e^+ e^- \rightarrow D^{*+} \pi^- X$	
seen	AVERY 90	CLEO	$e^+ e^- \rightarrow D^{*+} \pi^- X$	
seen	ALBRECHT 89H	ARG	$e^+ e^- \rightarrow D^* \pi^- X$	
seen	ANJOS 89C	TPS	$\gamma N \rightarrow D^{*+} \pi^- X$	

  

$\Gamma(D^+ \pi^-)/\Gamma(D^*(2010)^+ \pi^-)$				$\Gamma_6/\Gamma_1$
VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.24	90	AVERY 90	CLEO	$e^+ e^- \rightarrow D^+ \pi^- X$

 **$D_1(2420)^0$  REFERENCES**

ABULENCIA 06A	PR D73 051104	A. Abulencia <i>et al.</i>	(CDF Collab.)
ABE 05A	PRL 94 221805	K. Abe <i>et al.</i>	(BELLE Collab.)
ABE 04D	PR D69 112002	K. Abe <i>et al.</i>	(BELLE Collab.)
ABREU 98M	PL B426 231	P. Abreu <i>et al.</i>	(DELPHI Collab.)
ACKERSTAFF 97W	ZPHY C76 425	K. Ackerstaff <i>et al.</i>	(OPAL Collab.)
AVERY 94C	PL B331 236	P. Avery <i>et al.</i>	(CLEO Collab.)
FRABETTI 94B	PRL 72 324	P.L. Frabetti <i>et al.</i>	(FNAL E687 Collab.)
AVERY 90	PR D41 774	P. Avery, D. Besson	(CLEO Collab.)
ALBRECHT 89H	PL B232 398	H. Albrecht <i>et al.</i>	(ARGUS Collab.) JP
ANJOS 89C	PRL 62 1717	J.C. Anjos <i>et al.</i>	(FNAL E691 Collab.)

**OTHER RELATED PAPERS**

AUBERT 06L	PR D74 012001	B. Aubert <i>et al.</i>	(BABAR Collab.)
ABAZOV 05O	PRL 95 171803	V.M. Abazov <i>et al.</i>	(D0 Collab.)
ACOSTA 05F	PR D71 051103R	D. Acosta <i>et al.</i>	(CDF Collab.)
CLOSE 05C	PR D72 094004	F.E. Close, E.S. Swanson	(OXFTP)
SEMENOV 99	SPU 42 847	S.V. Semenov	
	Translated from UFN 42 937.		