Reference = AAIJ 13CC; JHEP 1309 145
Verifier code = LHCB

Normally we send all verifications for one experiment to one person, usually the spokesperson or data-analysis co-ordinator, who then distributes them to the appropriate people. Please tell us if we should send the verifications for your experiment to someone else.

PLEASE READ NOW

PLEASE REPLY WITHIN ONE WEEK

Vincenzo Vagnoni

EMAIL: vincenzo.vagnoni@bo.infn.it

July 21, 2016

Dear Colleague,

(1) Please check the results of your experiment carefully. They are marked.

(2) Please reply within one week.

(3) Please reply even if everything is correct.

(4) IMPORTANT!! Please tell WHICH papers you are verifying. We have lots of requests out.

(5) Feel free to make comments on our treatment of any of the results (not just yours) you see.

Thank you for helping us make the Review accurate and useful.

Sincerely,

Simon Eidelman
BINP, Budker Inst. of Nuclear Physics
Prospekt Lavrent'eva 11
RU-630090 Novosibirsk
Russian Federation

EMAIL: simon.eidelman@cern.ch

CHARMED MESONS
($C = \pm 1$)

NODE=MXXX035

$D^+ = c\overline{d}$, $D^0 = c\overline{u}$, $\overline{D}^0 = \overline{c}\,u$, $D^- = \overline{c}\,d$, similarly for D^*'s

NODE=MXXX035

NODE=M097

$D_1(2420)^0$

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

$D_1(2420)^0$ MASS

NODE=M097M

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.

NODE=M097M

NODE=M097M

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
2420.5±0.6 OUR AVERAGE		Error includes scale factor of 1.3. See the ideogram below.			
YOUR DATA 2419.6±0.1±0.7	210k	AAIJ	13CC	LHCB	$pp \to D^{*+}\pi^- X$
$2423.1\pm1.5^{+0.4}_{-1.0}$	2.7k	[1] ABRAMOWICZ13		ZEUS	$e^\pm p \to D^{(*)+}\pi^- X$
2420.1±0.1±0.8	103k	DEL-AMO-SA..10P		BABR	$e^+e^- \to D^{*+}\pi^- X$
2426 ±3 ±1	151	ABE	05A	BELL	$B^- \to D^0\pi^+\pi^-\pi^-$
2421.4±1.5±0.9		[2] ABE	04D	BELL	$B^- \to D^{*+}\pi^-\pi^-$
$2421\ ^{+1}_{-2}$ ±2	286	AVERY	94C	CLE2	$e^+e^- \to D^{*+}\pi^- X$
2422 ±2 ±2	51	FRABETTI	94B	E687	$\gamma\,\mathrm{Be} \to D^{*+}\pi^- X$
2428 ±3 ±2	279	AVERY	90	CLEO	$e^+e^- \to D^{*+}\pi^- X$
2414 ±2 ±5	171	ALBRECHT	89H	ARG	$e^+e^- \to D^{*+}\pi^- X$
2428 ±8 ±5	171	ANJOS	89C	TPS	$\gamma N \to D^{*+}\pi^- X$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
2420.5±2.1±0.9	3110±340	[3] CHEKANOV	09	ZEUS	$e^\pm p \to D^{*+}\pi^- X$
2421.7±0.7±0.6	7.5k	ABULENCIA	06A	CDF	1900 $p\overline{p} \to D^{*+}\pi^- X$
2425 ±3	235	[4] ABREU	98M	DLPH	e^+e^-

[1] From the combined fit of the $M(D^+\pi^-)$ and $M(D^{*+}\pi^-)$ distributions. and A_{D_2} fixed to the theoretical prediction of -1.

NODE=M097M;LINKAGE=AR

[2] Fit includes the contribution from $D_1^*(2430)^0$.

NODE=M097M;LINKAGE=AB

[3] Calculated using the mass difference $m(D_1^0) - m(D^{*+})_{PDG}$ 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 0.9 MeV.

NODE=M097M;LINKAGE=CH

[4] No systematic error given.

NODE=M097M;LINKAGE=K

$D_1(2420)^0$ WIDTH

NODE=M097W

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
31.7± 2.5 OUR AVERAGE		Error includes scale factor of 3.5. See the ideogram below.			
YOUR DATA 35.2± 0.4± 0.9	210k	AAIJ	13CC	LHCB	$pp \to D^{*+}\pi^- X$
$38.8\pm 5.0^{+\ 1.9}_{-\ 5.4}$	2.7k	[1] ABRAMOWICZ13		ZEUS	$e^\pm p \to D^{(*)+}\pi^- X$
31.4± 0.5± 1.3	103k	DEL-AMO-SA..10P		BABR	$e^+e^- \to D^{*+}\pi^- X$
20.0± 1.7± 1.3	7.5k	ABULENCIA	06A	CDF	1900 $p\overline{p} \to D^{*+}\pi^- X$
24 ± 7 ± 8	151	ABE	05A	BELL	$B^- \to D^0\pi^+\pi^-\pi^-$
23.7± 2.7± 4.0		[2] ABE	04D	BELL	$B^- \to D^{*+}\pi^-\pi^-$
$20\ ^{+\ 6}_{-\ 5}$ ± 3	286	AVERY	94C	CLE2	$e^+e^- \to D^{*+}\pi^- X$
15 ± 8 ± 4	51	FRABETTI	94B	E687	$\gamma\,\mathrm{Be} \to D^{*+}\pi^- X$
$23\ ^{+\ 8}_{-\ 6}\ ^{+10}_{-\ 3}$	279	AVERY	90	CLEO	$e^+e^- \to D^{*+}\pi^- X$
$13 \pm 6\ ^{+10}_{-\ 5}$	171	ALBRECHT	89H	ARG	$e^+e^- \to D^{*+}\pi^- X$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$53.2\pm 7.2^{+\ 3.3}_{-\ 4.9}$	3110±340	CHEKANOV	09	ZEUS	$e^\pm p \to D^{*+}\pi^- X$
58 ±14 ±10	171	ANJOS	89C	TPS	$\gamma N \to D^{*+}\pi^- X$

[1] From the combined fit of the $M(D^+\pi^-)$ and $M(D^{*+}\pi^-)$ distributions. and A_{D_2} fixed to the theoretical prediction of -1. NODE=M097W;LINKAGE=AR

[2] Fit includes the contribution from $D_1^*(2430)^0$. NODE=M097W;LINKAGE=AB

$D_1(2420)^0$ POLARIZATION AMPLITUDE A_{D_1} NODE=M097PAH

A polarization amplitude A_{D_1} is a parameter that depends on the initial polarization of the D_1 and is sensitive to a possible S-wave contribution to its decay. For D_1 decays the helicity angle, θ_h, distribution varies like $1 + A_{D_1}\cos^2\theta_h$, where θ_h is the angle in the D^* rest frame between the two pions emitted by the $D_1 \to D^*\pi$ and the $D^* \to D\pi$. NODE=M097PAH

Unpolarized D_1 decaying purely via D-wave is predicted to give $A_{D_1} = 3$.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
5.73±0.25 OUR AVERAGE					NODE=M097PAH
$7.8\ ^{+6.7}_{-2.7}\ ^{+4.6}_{-1.8}$	2.7k	[1] ABRAMOWICZ	13	ZEUS	$e^\pm p \to D^{(*)+}\pi^- X$
5.72±0.25	103k	DEL-AMO-SA..	10P	BABR	$e^+e^- \to D^{*+}\pi^- X$
$5.9\ ^{+3.0}_{-1.7}\ ^{+2.4}_{-1.0}$		CHEKANOV	09	ZEUS	$e^\pm p \to D^{*+}\pi^- X$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
YOUR DATA 3.30±0.48	210k	[2] AAIJ	13CC	LHCB	$pp \to D^{*+}\pi^- X$
3.8 ±0.6 ±0.8		[3] AUBERT	09Y	BABR	$B^+ \to D_1^0\ell^+\nu_\ell$
$2.74^{+1.40}_{-0.93}$		[4] AVERY	94C	CLE2	$e^+e^- \to D^{*+}\pi^- X$

[1] From the combined fit of the $M(D^+\pi^-)$ and $M(D^{*+}\pi^-)$ distributions. and A_{D_2} fixed to the theoretical prediction of -1. A pure D-wave not excluded although some S-wave mixing possible. NODE=M097PAH;LINKAGE=AR

YOUR NOTE [2] Systematic uncertainty not estimated. Resonance parameters fixed. NODE=M097PAH;LINKAGE=A

[3] 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 and helicity angle distributions for charged and neutral D_1 mesons. NODE=M097PAH;LINKAGE=AU

[4] Systematic uncertainties not estimated. NODE=M097PAH;LINKAGE=AV

$D_1(2420)^0$ REFERENCES NODE=M097

YOUR PAPER AAIJ	13CC	JHEP 1309 145	R. Aaij *et al.*	(LHCb Collab.)	REFID=55581
ABRAMOWICZ	13	NP B866 229	H. Abramowicz *et al.*	(ZEUS Collab.)	REFID=54743
DEL-AMO-SA...	10P	PR D82 111101	P. del Amo Sanchez *et al.*	(BABAR Collab.)	REFID=53534
AUBERT	09Y	PRL 103 051803	B. Aubert *et al.*	(BABAR Collab.)	REFID=52929
CHEKANOV	09	EPJ C60 25	S. Chekanov *et al.*	(ZEUS Collab.)	REFID=52733
ABULENCIA	06A	PR D73 051104	A. Abulencia *et al.*	(CDF Collab.)	REFID=51054
ABE	05A	PRL 94 221805	K. Abe *et al.*	(BELLE Collab.)	REFID=50755
ABE	04D	PR D69 112002	K. Abe *et al.*	(BELLE Collab.)	REFID=50011
ABREU	98M	PL B426 231	P. Abreu *et al.*	(DELPHI Collab.)	REFID=46315
AVERY	94C	PL B331 236	P. Avery *et al.*	(CLEO Collab.)	REFID=44096
FRABETTI	94B	PRL 72 324	P.L. Frabetti *et al.*	(FNAL E687 Collab.)	REFID=43687
AVERY	90	PR D41 774	P. Avery, D. Besson	(CLEO Collab.)	REFID=41013
ALBRECHT	89H	PL B232 398	H. Albrecht *et al.*	(ARGUS Collab.) JP	REFID=41001
ANJOS	89C	PRL 62 1717	J.C. Anjos *et al.*	(FNAL E691 Collab.)	REFID=40737

NODE=M119

$D_2^*(2460)^0$ $I(J^P) = \frac{1}{2}(2^+)$

$J^P = 2^+$ assignment strongly favored (ALBRECHT 89B, ALBRECHT 89H), natural parity confirmed by the helicity analysis (DEL-AMO-SANCHEZ 10P). AAIJ 13CC confirms $J^P = 2^+$ and natural parity. NODE=M119

$D_2^*(2460)0$ MASS NODE=M119M

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. NODE=M119M

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
2460.47±0.21 OUR AVERAGE Error includes scale factor of 1.6. See the ideogram below.					NODE=M119M
YOUR DATA 2460.4 ±0.4 ±1.2	82k	AAIJ	13CC	LHCB	$pp \to D^{*+}\pi^- X$

YOUR DATA	2460.4	±0.1	±0.1	675k	AAIJ	13CC	LHCB	$pp \to D^+\pi^-X$	OCCUR=2
	2462.5	±2.4	$^{+1.3}_{-1.1}$	2.3k	[1] ABRAMOWICZ	13	ZEUS	$e^\pm p \to D^{(*)+}\pi^-X$	
	2462.2	±0.1	±0.8	243k	DEL-AMO-SA..	10P	BABR	$e^+e^- \to D^+\pi^-X$	
	2460.4	±1.2	±2.2	3.4k	AUBERT	09AB	BABR	$B^- \to D^+\pi^-\pi^-$	
	2461.6	±2.1	±3.3		[2] ABE	04D	BELL	$B^- \to D^+\pi^-\pi^-$	
	2464.5	±1.1	±1.9	5.8k	[2] LINK	04A	FOCS	γ A	
	2465	±3	±3	486	AVERY	94C	CLE2	$e^+e^- \to D^+\pi^-$X	
	2453	±3	±2	128	FRABETTI	94B	E687	γBe $\to D^+\pi^-$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. • • •								
	2469.1	±3.7	$^{+1.2}_{-1.3}$	1.5k	[3] CHEKANOV	09	ZEUS	$e^\pm p \to D^{(*)+}\pi^-X$	
	2463.3	±0.6	±0.8	20k	ABULENCIA	06A	CDF	1900 $p\bar{p} \to D^+\pi^-X$	
	2461	±6		126	[4] ABREU	98M	DLPH	e^+e^-	
	2466	±7		1	ASRATYAN	95	BEBC	53,40 $\nu(\bar{\nu}) \to pX,dX$	

[1] From the combined fit of the $M(D^+\pi^-)$ and $M(D^{*+}\pi^-)$ distributions. and A_{D_2} fixed to the theoretical prediction of -1. NODE=M119M;LINKAGE=AR

[2] Fit includes the contribution from $D_0^*(2400)^0$. NODE=M119M;LINKAGE=LI

[3] 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. NODE=M119M;LINKAGE=CH

[4] No systematic error given. NODE=M119M;LINKAGE=K

$D_2^*(2460)^0$ WIDTH

NODE=M119W

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
47.7± 1.3 OUR AVERAGE Error includes scale factor of 2.0. See the ideogram below.					NODE=M119W
YOUR DATA 43.2± 1.2± 3.0	82k	AAIJ	13CC	LHCB	$pp \to D^{*+}\pi^-X$
YOUR DATA 45.6± 0.4± 1.1	675k	AAIJ	13CC	LHCB	$pp \to D^+\pi^-X$ OCCUR=2
46.6± 8.1$^{+5.9}_{-3.8}$	2.3k	[5] ABRAMOWICZ	13	ZEUS	$e^\pm p \to D^{(*)+}\pi^-X$
50.5± 0.6± 0.7	243k	DEL-AMO-SA..	10P	BABR	$e^+e^- \to D^+\pi^-X$
41.8± 2.5± 2.9	3.4k	AUBERT	09AB	BABR	$B^- \to D^+\pi^-\pi^-$
49.2± 2.3± 1.3	20k	ABULENCIA	06A	CDF	1900 $p\bar{p} \to D^+\pi^-X$
45.6± 4.4± 6.7		[6] ABE	04D	BELL	$B^- \to D^+\pi^-\pi^-$
38.7± 5.3± 2.9	5.8k	[6] LINK	04A	FOCS	γ A
28 $^{+8}_{-7}$ ± 6	486	AVERY	94C	CLE2	$e^+e^- \to D^+\pi^-$X
25 ±10 ± 5	128	FRABETTI	94B	E687	γBe $\to D^+\pi^-$X
20 $^{+9}_{-12}$ $^{+9}_{-10}$	440	AVERY	90	CLEO	$e^+e^- \to D^{*+}\pi^-$X
15 $^{+13}_{-10}$ $^{+5}_{-10}$	337	ALBRECHT	89B	ARG	$e^+e^- \to D^+\pi^-$X
20 ±10 ± 5	153	ANJOS	89C	TPS	$\gamma N \to D^+\pi^-$X

[5] From the combined fit of the $M(D^+\pi^-)$ and $M(D^{*+}\pi^-)$ distributions. and A_{D_2} fixed to the theoretical prediction of -1. NODE=M119W;LINKAGE=AR

[6] Fit includes the contribution from $D_0^*(2400)^0$. NODE=M119W;LINKAGE=LI

$D_2^*(2460)^0$ REFERENCES

NODE=M119

YOUR PAPER	AAIJ	13CC	JHEP 1309 145	R. Aaij *et al.*	(LHCb Collab.) REFID=55581
	ABRAMOWICZ	13	NP B866 229	H. Abramowicz *et al.*	(ZEUS Collab.) REFID=54743
	DEL-AMO-SA...	10P	PR D82 111101	P. del Amo Sanchez *et al.*	(BABAR Collab.) REFID=53534
	AUBERT	09AB	PR D79 112004	B. Aubert *et al.*	(BABAR Collab.) REFID=52941
	CHEKANOV	09	EPJ C60 25	S. Chekanov *et al.*	(ZEUS Collab.) REFID=52733
	ABULENCIA	06A	PR D73 051104	A. Abulencia *et al.*	(CDF Collab.) REFID=51054
	ABE	04D	PR D69 112002	K. Abe *et al.*	(BELLE Collab.) REFID=50011
	LINK	04A	PL B586 11	J.M. Link *et al.*	(FOCUS Collab.) REFID=49775
	ABREU	98M	PL B426 231	P. Abreu *et al.*	(DELPHI Collab.) REFID=46315
	ASRATYAN	95	ZPHY C68 43	A.E. Asratyan *et al.*	(BIRM, BELG, CERN+) REFID=44439
	AVERY	94C	PL B331 236	P. Avery *et al.*	(CLEO Collab.) REFID=44096
	FRABETTI	94B	PRL 72 324	P.L. Frabetti *et al.*	(FNAL E687 Collab.) REFID=43687
	AVERY	90	PR D41 774	P. Avery, D. Besson	(CLEO Collab.) REFID=41013
	ALBRECHT	89B	PL B221 422	H. Albrecht *et al.*	(ARGUS Collab.) JP REFID=40736
	ALBRECHT	89H	PL B232 398	H. Albrecht *et al.*	(ARGUS Collab.) JP REFID=41001
	ANJOS	89C	PRL 62 1717	J.C. Anjos *et al.*	(FNAL E691 Collab.) REFID=40737

NODE=M150

$D_2^*(2460)^\pm$ $I(J^P) = \frac{1}{2}(2^+)$

$J^P = 2^+$ assignment strongly favored(ALBRECHT 89B). NODE=M150

$D_2^*(2460)^\pm$ MASS

NODE=M150M

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT	
2465.4±1.3 OUR AVERAGE		Error includes scale factor of 3.1. See the ideogram below.				NODE=M150M
2465.6±1.8±1.3		[1] AAIJ	15X	LHCB	$B^0 \to \overline{D}^0 K^+ \pi^-$	
2468.6±0.6±0.3		[2] AAIJ	15Y	LHCB	$B^0 \to \overline{D}^0 \pi^+ \pi^-$	
YOUR DATA 2463.1±0.2±0.6	342k	AAIJ	13CC	LHCB	$pp \to D^0 \pi^+ X$	
$2460.6 \pm 4.4^{+3.6}_{-0.8}$	1371	[3] ABRAMOWICZ	13	ZEUS	$e^\pm p \to D^{(*)0} \pi^+ X$	
2465.4±0.2±1.1	111k	[4] DEL-AMO-SA..	10P	BABR	$e^+ e^- \to D^0 \pi^+ X$	
$2465.7 \pm 1.8^{+1.4}_{-4.8}$	2909	KUZMIN	07	BELL	$e^+ e^- \to$ hadrons	
2463 ±3 ±3	310	BERGFELD	94B	CLE2	$e^+ e^- \to D^0 \pi^+ X$	
2453 ±3 ±2	185	FRABETTI	94B	E687	γBe $\to D^0 \pi^+ X$	
2469 ±4 ±6		ALBRECHT	89F	ARG	$e^+ e^- \to D^0 \pi^+ X$	
• • • We do not use the following data for averages, fits, limits, etc. • • •						
2468.1±0.6±0.5		[5] AAIJ	15Y	LHCB	$B^0 \to \overline{D}^0 \pi^+ \pi^-$	OCCUR=2
2467.6±1.5±0.8	3.5k	[6] LINK	04A	FOCS	γ A	

[1] From the Dalitz plot analysis including various K^* and D^{**} mesons as well as broad structures in the $K\pi$ S-wave and the $D\pi$ S- and P-waves. NODE=M150M;LINKAGE=A

[2] Modeling the $\pi^+\pi^-$ S-wave with the Isobar formalism. NODE=M150M;LINKAGE=B

[3] From the fit of the $M(D^0\pi^+)$ distribution. The widths of the D_1^+ and D_2^{*+} are fixed to 25 MeV and 37 MeV, and A_{D_1} and A_{D_2} are fixed to the theoretical predictions of 3 and -1, respectively. NODE=M150M;LINKAGE=AB

[4] At a fixed width of 50.5 MeV. NODE=M150M;LINKAGE=DE

[5] Modeling the $\pi^+\pi^-$ S-wave with the K-matrix formalism. NODE=M150M;LINKAGE=C

[6] Fit includes the contribution from $D_0^*(2400)^\pm$. Not independent of the corresponding mass difference measurement, $(m_{D_2^*(2460)^\pm}) - (m_{D_2^*(2460)^0})$. NODE=M150M;LINKAGE=LI

$D_2^*(2460)^\pm$ WIDTH

NODE=M150W

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT	
46.7± 1.2 OUR AVERAGE						NODE=M150W
46.0± 3.4±3.2		[1] AAIJ	15X	LHCB	$B^0 \to \overline{D}^0 K^+ \pi^-$	
47.3± 1.5±0.7		[2] AAIJ	15Y	LHCB	$B^0 \to \overline{D}^0 \pi^+ \pi^-$	
YOUR DATA 48.6± 1.3±1.9	342k	AAIJ	13CC	LHCB	$pp \to D^0 \pi^+ X$	
49.7± 3.8±6.4	2909	KUZMIN	07	BELL	$e^+ e^- \to$ hadrons	
34.1± 6.5±4.2	3.5k	[3] LINK	04A	FOCS	γ A	
$27 \ {}^{+11}_{-8} \ \pm 5$	310	BERGFELD	94B	CLE2	$e^+ e^- \to D^0 \pi^+ X$	
23 ± 9 ±5	185	FRABETTI	94B	E687	γBe $\to D^0 \pi^+ X$	
• • • We do not use the following data for averages, fits, limits, etc. • • •						
46.0± 1.4±1.8		[4] AAIJ	15Y	LHCB	$B^0 \to \overline{D}^0 \pi^+ \pi^-$	OCCUR=2

[1] From the Dalitz plot analysis including various K^* and D^{**} mesons as well as broad structures in the $K\pi$ S-wave and the $D\pi$ S- and P-waves. NODE=M150W;LINKAGE=A

[2] Modeling the $\pi^+\pi^-$ S-wave with the Isobar formalism. NODE=M150W;LINKAGE=B

[3] Fit includes the contribution from $D_0^*(2400)^\pm$. NODE=M150W;LINKAGE=LI

[4] Modeling the $\pi^+\pi^-$ S-wave with the K-matrix formalism. NODE=M150W;LINKAGE=C

$D_2^*(2460)^\pm$ REFERENCES

NODE=M150

AAIJ	15X	PR D92 012012	R. Aaij *et al.*	(LHCb Collab.)	REFID=56588
AAIJ	15Y	PR D92 032002	R. Aaij *et al.*	(LHCb Collab.)	REFID=56609
YOUR PAPER AAIJ	13CC	JHEP 1309 145	R. Aaij *et al.*	(LHCb Collab.)	REFID=55581
ABRAMOWICZ	13	NP B866 229	H. Abramowicz *et al.*	(ZEUS Collab.)	REFID=54743
DEL-AMO-SA...	10P	PR D82 111101	P. del Amo Sanchez *et al.*	(BABAR Collab.)	REFID=53534
KUZMIN	07	PR D76 012006	A. Kuzmin *et al.*	(BELLE Collab.)	REFID=51854
LINK	04A	PL B586 11	J.M. Link *et al.*	(FOCUS Collab.)	REFID=49775
BERGFELD	94B	PL B340 194	T. Bergfeld *et al.*	(CLEO Collab.)	REFID=44099
FRABETTI	94B	PRL 72 324	P.L. Frabetti *et al.*	(FNAL E687 Collab.)	REFID=43687
ALBRECHT	89B	PL B221 422	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=40736
ALBRECHT	89F	PL B231 208	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=40931

NODE=M198

$D(2550)^0$

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

OMITTED FROM SUMMARY TABLE

Unnatural parity according to the helicity analysis of DEL-AMO-SANCHEZ 10P and AAIJ 13CC. DEL-AMO-SANCHEZ 10P suggests $J^P = 0^-$.

NODE=M198

$D(2550)^0$ MASS

NODE=M198M

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
2564 ±20 OUR AVERAGE		Error includes scale factor of 3.9.		
YOUR DATA 2579.5± 3.4±5.5	60k	AAIJ 13CC	LHCB	$pp \to D^{*+}\pi^- X$
2539.4± 4.5±6.8	34k	DEL-AMO-SA..10P	BABR	$e^+e^- \to D^{*+}\pi^- X$

NODE=M198M

NODE=M198M

$D(2550)^0$ WIDTH

NODE=M198W

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
135 ±17 OUR AVERAGE				
YOUR DATA 177.5±17.8±46.0	60k	AAIJ 13CC	LHCB	$pp \to D^{*+}\pi^- X$
130 ±12 ±13	34k	DEL-AMO-SA..10P	BABR	$e^+e^- \to D^{*+}\pi^- X$

NODE=M198W

NODE=M198W

$D(2550)^0$ POLARIZATION AMPLITUDE A_{D_J}

NODE=M198PAM

A polarization amplitude A_{D_J} is a parameter that depends on the initial polarization of the D_J. For D_J decays the helicity angle, θ_H, distribution varies like $1 + A_{D_J} \cos^2(\theta_H)$, where θ_H is the angle in the D_J rest frame between the two pions emitted in the $D_J \to D^*\pi$ and $D^* \to D\pi$ decays.

NODE=M198PAM

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
YOUR DATA 4.2±1.3	60k	[1] AAIJ 13CC	LHCB	$pp \to D^{*+}\pi^- X$
YOUR NOTE [1] Systematic uncertainty not estimated.				

NODE=M198PAM

NODE=M198PAM;LINKAGE=A

$D(2550)^0$ REFERENCES

NODE=M198

YOUR PAPER AAIJ	13CC	JHEP 1309 145	R. Aaij *et al.*	(LHCb Collab.)
DEL-AMO-SA...	10P	PR D82 111101	P. del Amo Sanchez *et al.*	(BABAR Collab.)

REFID=55581
REFID=53534
NODE=M199

$D_J^*(2600)$ was $D(2600)$,

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

OMITTED FROM SUMMARY TABLE

J^P consistent with natural parity (DEL-AMO-SANCHEZ 10P, AAIJ 13CC).

NODE=M199

$D_J^*(2600)$ MASS

NODE=M199M

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
2622 ±12 OUR AVERAGE		Error includes scale factor of 4.7. See the ideogram below.			
YOUR DATA 2649.2± 3.5±3.5	51k	AAIJ 13CC	LHCB		$pp \to D^{*+}\pi^- X$
2608.7± 2.4±2.5	26k	DEL-AMO-SA..10P	BABR	0	$e^+e^- \to D^+\pi^- X$
2621.3± 3.7±4.2	13k	[1] DEL-AMO-SA..10P	BABR	+	$e^+e^- \to D^0\pi^+ X$

NODE=M199M

OCCUR=2

[1] At a fixed width of 93 MeV.

NODE=M199M;LINKAGE=DE

$D_J^*(2600)$ WIDTH

NODE=M199W

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
104 ±20 OUR AVERAGE		Error includes scale factor of 1.6.		
YOUR DATA 140.2±17.1±18.6	51k	AAIJ 13CC	LHCB	$pp \to D^{*+}\pi^- X$
93 ± 6 ±13	26k	DEL-AMO-SA..10P	BABR	$e^+e^- \to D^+\pi^- X$

NODE=M199W

$D_J^*(2600)$ REFERENCES

NODE=M199

YOUR PAPER AAIJ 13CC JHEP 1309 145 R. Aaij *et al.* (LHCb Collab.) REFID=55581
DEL-AMO-SA... 10P PR D82 111101 P. del Amo Sanchez *et al.* (BABAR Collab.) REFID=53534
NODE=M228

$D(2740)^0$

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

OMITTED FROM SUMMARY TABLE

J^P consistent with unnatural parity (AAIJ 13CC).

NODE=M228

$D(2740)^0$ MASS

NODE=M228M

VALUE (MeV)	*EVTS*	*DOCUMENT ID*	*TECN*	*COMMENT*
YOUR DATA **2737.0±3.5±11.2**	7.7k	AAIJ	13CC LHCB	$pp \to D^{*+}\pi^- X$

NODE=M228M

$D(2740)^0$ WIDTH

NODE=M228W

VALUE (MeV)	*EVTS*	*DOCUMENT ID*	*TECN*	*COMMENT*
YOUR DATA **73.2±13.4±25.0**	7.7k	AAIJ	13CC LHCB	$pp \to D^{*+}\pi^- X$

NODE=M228W

$D(2740)^0$ POLARIZATION AMPLITUDE A_{D_J}

NODE=M228PAM

A polarization amplitude A_{D_J} is a parameter that depends on the initial polarization of the D_J. For D_J decays the helicity angle, θ_H, distribution varies like $1 + A_{D_J} \cos^2(\theta_H)$, where θ_H is the angle in the D_J rest frame between the two pions emitted in the $D_J \to D^*\pi$ and $D^* \to D\pi$ decays.

NODE=M228PAM

VALUE	*EVTS*	*DOCUMENT ID*	*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •				
YOUR DATA 3.1±2.2	7.7k	[1] AAIJ	13CC LHCB	$pp \to D^{*+}\pi^- X$
YOUR NOTE [1] Systematic uncertainty not estimated.				

NODE=M228PAM

NODE=M228PAM;LINKAGE=A

$D(2740)^0$ REFERENCES

NODE=M228

YOUR PAPER AAIJ 13CC JHEP 1309 145 R. Aaij *et al.* (LHCb Collab.) REFID=55581
NODE=M203

$D(2750)$

$I(J^P) = \frac{1}{2}(3^-)$

OMITTED FROM SUMMARY TABLE

J^P determined by AAIJ 15Y from the Dalitz plot analysis of $B^0 \to \overline{D}^0\pi^+\pi^-$ decays. J^P consistent with natural parity (AAIJ 13CC).

NODE=M203

$D(2750)$ MASS

NODE=M203M

VALUE (MeV)	*EVTS*	*DOCUMENT ID*	*TECN*	*CHG*	*COMMENT*
2763 ± 4 OUR AVERAGE		Error includes scale factor of 2.3. See the ideogram below.			
2798 ± 7 ± 7		[1] AAIJ	15Y LHCB		$B^0 \to \overline{D}^0\pi^+\pi^-$
YOUR DATA 2761.1± 5.1± 6.5	14k	AAIJ	13CC LHCB	0	$pp \to D^{*+}\pi^- X$
YOUR DATA 2760.1± 1.1± 3.7	56k	AAIJ	13CC LHCB	0	$pp \to D^+\pi^- X$
YOUR DATA 2771.7± 1.7± 3.8	20k	AAIJ	13CC LHCB	+	$pp \to D^0\pi^+ X$
2752.4± 1.7± 2.7	23.5k	[2] DEL-AMO-SA..10P	BABR	0	$e^+e^- \to D^{*+}\pi^- X$
2763.3± 2.3± 2.3	11.3k	[2] DEL-AMO-SA..10P	BABR	0	$e^+e^- \to D^+\pi^- X$
2769.7± 3.8± 1.5	5.7k	[2,3] DEL-AMO-SA..10P	BABR	+	$e^+e^- \to D^0\pi^+ X$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
2802 ±11 ±10		[4] AAIJ	15Y LHCB		$B^0 \to \overline{D}^0\pi^+\pi^-$

NODE=M203M

NODE=M203M

OCCUR=2

OCCUR=3

OCCUR=2

OCCUR=3

OCCUR=2

[1] Modeling the $\pi^+\pi^-$ S-wave with the Isobar formalism.
[2] The states observed in the $D^*\pi$ and $D\pi$ final states are not necessarily the same.
[3] At a fixed width of 60.9 MeV.
[4] Modeling the $\pi^+\pi^-$ S-wave with the K-matrix formalism.

NODE=M203M;LINKAGE=A
NODE=M203M;LINKAGE=DE
NODE=M203M;LINKAGE=DA
NODE=M203M;LINKAGE=B

$D(2750)$ WIDTH

NODE=M203W

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT	
65 ± 5 OUR AVERAGE							NODE=M203W
105 ±18 ±24		[5] AAIJ	15Y	LHCB		$B^0 \to \overline{D}^0 \pi^+ \pi^-$	
YOUR DATA 74.4± 3.4±37.0	14k	AAIJ	13CC	LHCB	0	$pp \to D^{*+} \pi^- X$	
YOUR DATA 74.4± 3.4±19.1	56k	AAIJ	13CC	LHCB	0	$pp \to D^+ \pi^- X$	OCCUR=2
YOUR DATA 66.7± 6.6±10.5	20k	AAIJ	13CC	LHCB	+	$pp \to D^0 \pi^+ X$	OCCUR=4
71 ± 6 ±11	23.5k	[6] DEL-AMO-SA..	10P	BABR		$e^+ e^- \to D^{*+} \pi^- X$	
60.9± 5.1± 3.6	11.3k	[6] DEL-AMO-SA..	10P	BABR		$e^+ e^- \to D^+ \pi^- X$	OCCUR=2
• • • We do not use the following data for averages, fits, limits, etc. • • •							
154 ±27 ±16		[7] AAIJ	15Y	LHCB		$B^0 \to \overline{D}^0 \pi^+ \pi^-$	OCCUR=2

[5] Modeling the $\pi^+ \pi^-$ S-wave with the Isobar formalism. NODE=M203W;LINKAGE=A

[6] The states observed in the $D^* \pi$ and $D \pi$ final states are not necessarily the same. NODE=M203W;LINKAGE=DE

[7] Modeling the $\pi^+ \pi^-$ S-wave with the K-matrix formalism. NODE=M203W;LINKAGE=B

$D(2750)$ REFERENCES

NODE=M203

AAIJ	15Y	PR D92 032002	R. Aaij *et al.*	(LHCb Collab.) JP	REFID=56609
YOUR PAPER AAIJ	13CC	JHEP 1309 145	R. Aaij *et al.*	(LHCb Collab.)	REFID=55581
DEL-AMO-SA...	10P	PR D82 111101	P. del Amo Sanchez *et al.*	(BABAR Collab.)	REFID=53534

NODE=M229

$D(3000)^0$

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

OMITTED FROM SUMMARY TABLE

Both natural- and unnatural-parity components observed depending on the decay mode (AAIJ 13CC). NODE=M229

$D(3000)^0$ MASS

NODE=M229M

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT	
• • • We do not use the following data for averages, fits, limits, etc. • • •						NODE=M229M
YOUR DATA 2971.8±8.7	9.5k	[1,2] AAIJ	13CC	LHCB	$pp \to D^{*+} \pi^- X$	
YOUR DATA 3008.1±4.0	17.6k	[1,3] AAIJ	13CC	LHCB	$pp \to D^+ \pi^- X$	OCCUR=2

YOUR NOTE [1] Systematic uncertainty not estimated. NODE=M229M;LINKAGE=A

YOUR NOTE [2] Unnatural parity preferred. NODE=M229M;LINKAGE=B

YOUR NOTE [3] Natural parity state. A state $D(3000)^+$ is possibly seen in $D^0 \pi^+$ final state. NODE=M229M;LINKAGE=C

$D(3000)^0$ WIDTH

NODE=M229W

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT	
• • • We do not use the following data for averages, fits, limits, etc. • • •						NODE=M229W
YOUR DATA 188.1±44.8	9.5k	[4,5] AAIJ	13CC	LHCB	$pp \to D^{*+} \pi^- X$	
YOUR DATA 110.5±11.5	17.6k	[4,6] AAIJ	13CC	LHCB	$pp \to D^+ \pi^- X$	OCCUR=2

YOUR NOTE [4] Systematic uncertainty not estimated. NODE=M229W;LINKAGE=A

YOUR NOTE [5] Unnatural parity preferred. NODE=M229W;LINKAGE=C

YOUR NOTE [6] Natural parity state. A state $D(3000)^+$ is possibly seen in $D^0 \pi^+$ final state. NODE=M229W;LINKAGE=B

$D(3000)^0$ POLARIZATION AMPLITUDE A_{D_J}

NODE=M229PAM

A polarization amplitude A_{D_J} is a parameter that depends on the initial polarization of the D_J. For D_J decays the helicity angle, θ_H, distribution varies like $1 + A_{D_J} \cos^2(\theta_H)$, where θ_H is the angle in the D_J rest frame between the two pions emitted in the $D_J \to D^* \pi$ and $D^* \to D \pi$ decays. NODE=M229PAM

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT	
• • • We do not use the following data for averages, fits, limits, etc. • • •						NODE=M229PAM
YOUR DATA 1.5±0.9	9.5k	[7] AAIJ	13CC	LHCB	$pp \to D^{*+} \pi^- X$	

YOUR NOTE [7] Systematic uncertainty not estimated. NODE=M229PAM;LINKAGE=A

$D(3000)^0$ REFERENCES

NODE=M229

YOUR PAPER AAIJ 13CC JHEP 1309 145 R. Aaij *et al.* (LHCb Collab.) REFID=55581