

# CHARMED MESONS ( $C = \pm 1$ )

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

**$D^\pm$**

$$I(J^P) = \frac{1}{2}(0^-)$$

$$\text{Mass } m = 1869.3 \pm 0.5 \text{ MeV} \quad (S = 1.1)$$

$$\text{Mean life } \tau = (1.051 \pm 0.013) \times 10^{-12} \text{ s}$$

$$c\tau = 315 \mu\text{m}$$

### c-quark decays

$$\Gamma(c \rightarrow \ell^+ \text{ anything}) / \Gamma(c \rightarrow \text{ anything}) = 0.095 \pm 0.009 \text{ [mm]}$$

### CP-violation decay-rate asymmetries

$$A_{CP}(K^+ K^- \pi^\pm) = -0.017 \pm 0.027$$

$$A_{CP}(K^\pm K^{*0}) = -0.02 \pm 0.05$$

$$A_{CP}(\phi \pi^\pm) = -0.014 \pm 0.033$$

$$A_{CP}(\pi^+ \pi^- \pi^\pm) = -0.02 \pm 0.04$$

### $D^+ \rightarrow \bar{K}^*(892)^0 \ell^+ \nu_\ell$ form factors

$$r_V = 1.82 \pm 0.09$$

$$r_2 = 0.78 \pm 0.07$$

$$r_3 = 0.0 \pm 0.4$$

$$\Gamma_L / \Gamma_T = 1.14 \pm 0.08$$

$$\Gamma_+ / \Gamma_- = 0.21 \pm 0.04 \quad (S = 1.3)$$

$D^-$  modes are charge conjugates of the modes below.

<b><math>D^+</math> DECAY MODES</b>	Fraction ( $\Gamma_i/\Gamma$ )	Scale factor/ Confidence level	$p$ (MeV/c)
	<b>Inclusive modes</b>		
$e^+$ anything	(17.2 $\pm$ 1.9 ) %		—
$K^-$ anything	(24.2 $\pm$ 2.8 ) %	S=1.4	—
$\bar{K}^0$ anything + $K^0$ anything	(59 $\pm$ 7 ) %		—
$K^+$ anything	( 5.8 $\pm$ 1.4 ) %		—
$\eta$ anything	[nn] < 13 %	CL=90%	—

### Leptonic and semileptonic modes

$\mu^+ \nu_\mu$		$( 8 \begin{smallmatrix} +17 \\ -5 \end{smallmatrix} ) \times 10^{-4}$	932
$\overline{K}^0 \ell^+ \nu_\ell$	[ $\infty$ ]	$( 6.8 \pm 0.8 ) \%$	—
$\overline{K}^0 e^+ \nu_e$		$( 6.7 \pm 0.9 ) \%$	868
$\overline{K}^0 \mu^+ \nu_\mu$		$( 7.0 \begin{smallmatrix} +3.0 \\ -2.0 \end{smallmatrix} ) \%$	865
$K^- \pi^+ e^+ \nu_e$		$( 4.1 \begin{smallmatrix} +0.9 \\ -0.7 \end{smallmatrix} ) \%$	863
$\overline{K}^*(892)^0 e^+ \nu_e$ $\times B(\overline{K}^{*0} \rightarrow K^- \pi^+)$		$( 3.2 \pm 0.33 ) \%$	720
$K^- \pi^+ e^+ \nu_e$ nonresonant		$< 7 \times 10^{-3}$ CL=90%	863
$K^- \pi^+ \mu^+ \nu_\mu$		$( 3.2 \pm 0.4 ) \%$ S=1.1	851
$\overline{K}^*(892)^0 \mu^+ \nu_\mu$ $\times B(\overline{K}^{*0} \rightarrow K^- \pi^+)$		$( 2.9 \pm 0.4 ) \%$	715
$K^- \pi^+ \mu^+ \nu_\mu$ nonresonant		$( 2.7 \pm 1.1 ) \times 10^{-3}$	851
$(\overline{K}^*(892)\pi)^0 e^+ \nu_e$		$< 1.2 \%$ CL=90%	714
$(\overline{K}\pi\pi)^0 e^+ \nu_e$ non- $\overline{K}^*(892)$		$< 9 \times 10^{-3}$ CL=90%	846
$K^- \pi^+ \pi^0 \mu^+ \nu_\mu$		$< 1.4 \times 10^{-3}$ CL=90%	825
$\pi^0 \ell^+ \nu_\ell$	[ $pp$ ]	$( 3.1 \pm 1.5 ) \times 10^{-3}$	930

Fractions of some of the following modes with resonances have already appeared above as submodes of particular charged-particle modes.

$\overline{K}^*(892)^0 \ell^+ \nu_\ell$	[ $\infty$ ]	$( 4.7 \pm 0.4 ) \%$	—
$\overline{K}^*(892)^0 e^+ \nu_e$		$( 4.8 \pm 0.5 ) \%$	720
$\overline{K}^*(892)^0 \mu^+ \nu_\mu$		$( 4.4 \pm 0.6 ) \%$ S=1.1	715
$\overline{K}_1(1270)^0 \mu^+ \nu_\mu$		$< 3.5 \%$ CL=95%	493
$\overline{K}^*(1410)^0 \mu^+ \nu_\mu$		$< 2.7 \%$ CL=95%	389
$\overline{K}_2^*(1430)^0 \mu^+ \nu_\mu$		$< 8 \times 10^{-3}$ CL=95%	374
$\rho^0 e^+ \nu_e$		$( 2.2 \pm 0.8 ) \times 10^{-3}$	776
$\rho^0 \mu^+ \nu_\mu$		$( 2.7 \pm 0.7 ) \times 10^{-3}$	772
$\phi e^+ \nu_e$		$< 2.09 \%$ CL=90%	657
$\phi \mu^+ \nu_\mu$		$< 3.72 \%$ CL=90%	651
$\eta \ell^+ \nu_\ell$		$< 5 \times 10^{-3}$ CL=90%	—
$\eta'(958) \mu^+ \nu_\mu$		$< 9 \times 10^{-3}$ CL=90%	684

### Hadronic modes with a $\overline{K}$ or $\overline{K}K\overline{K}$

$\overline{K}^0 \pi^+$		$( 2.89 \pm 0.26 ) \%$ S=1.1	862
$K^- \pi^+ \pi^+$	[ $qq$ ]	$( 9.0 \pm 0.6 ) \%$	845
$\overline{K}^*(892)^0 \pi^+$ $\times B(\overline{K}^{*0} \rightarrow K^- \pi^+)$		$( 1.27 \pm 0.13 ) \%$	712
$\overline{K}_0^*(1430)^0 \pi^+$ $\times B(\overline{K}_0^*(1430)^0 \rightarrow K^- \pi^+)$		$( 2.3 \pm 0.3 ) \%$	368
$\overline{K}^*(1680)^0 \pi^+$ $\times B(\overline{K}^*(1680)^0 \rightarrow K^- \pi^+)$		$( 3.7 \pm 0.8 ) \times 10^{-3}$	65

$K^- \pi^+ \pi^+$ nonresonant	( 8.5 ± 0.8 ) %		845
$\bar{K}^0 \pi^+ \pi^0$	[qq] ( 9.7 ± 3.0 ) %	S=1.1	845
$\bar{K}^0 \rho^+$	( 6.6 ± 2.5 ) %		680
$\bar{K}^*(892)^0 \pi^+$	( 6.3 ± 0.4 ) × 10 <sup>-3</sup>		712
× B( $\bar{K}^{*0} \rightarrow \bar{K}^0 \pi^0$ )			
$\bar{K}^0 \pi^+ \pi^0$ nonresonant	( 1.3 ± 1.1 ) %		845
$K^- \pi^+ \pi^+ \pi^0$	[qq] ( 6.4 ± 1.1 ) %		816
$\bar{K}^*(892)^0 \rho^+$ total	( 1.4 ± 0.9 ) %		423
× B( $\bar{K}^{*0} \rightarrow K^- \pi^+$ )			
$\bar{K}_1(1400)^0 \pi^+$	( 2.2 ± 0.6 ) %		390
× B( $\bar{K}_1(1400)^0 \rightarrow K^- \pi^+ \pi^0$ )			
$K^- \rho^+ \pi^+$ total	( 3.1 ± 1.1 ) %		616
$K^- \rho^+ \pi^+$ 3-body	( 1.1 ± 0.4 ) %		616
$\bar{K}^*(892)^0 \pi^+ \pi^0$ total	( 4.5 ± 0.9 ) %		687
× B( $\bar{K}^{*0} \rightarrow K^- \pi^+$ )			
$\bar{K}^*(892)^0 \pi^+ \pi^0$ 3-body	( 2.8 ± 0.9 ) %		687
× B( $\bar{K}^{*0} \rightarrow K^- \pi^+$ )			
$K^*(892)^- \pi^+ \pi^+$ 3-body	( 7 ± 3 ) × 10 <sup>-3</sup>		688
× B( $K^{*-} \rightarrow K^- \pi^0$ )			
$K^- \pi^+ \pi^+ \pi^0$ nonresonant	[rr] ( 1.2 ± 0.6 ) %		816
$\bar{K}^0 \pi^+ \pi^+ \pi^-$	[qq] ( 7.0 ± 0.9 ) %		814
$\bar{K}^0 a_1(1260)^+$	( 4.0 ± 0.9 ) %		328
× B( $a_1(1260)^+ \rightarrow \pi^+ \pi^+ \pi^-$ )			
$\bar{K}_1(1400)^0 \pi^+$	( 2.2 ± 0.6 ) %		390
× B( $\bar{K}_1(1400)^0 \rightarrow \bar{K}^0 \pi^+ \pi^-$ )			
$K^*(892)^- \pi^+ \pi^+$ 3-body	( 1.4 ± 0.6 ) %		688
× B( $K^{*-} \rightarrow \bar{K}^0 \pi^-$ )			
$\bar{K}^0 \rho^0 \pi^+$ total	( 4.2 ± 0.9 ) %		614
$\bar{K}^0 \rho^0 \pi^+$ 3-body	( 5 ± 5 ) × 10 <sup>-3</sup>		614
$\bar{K}^0 \pi^+ \pi^+ \pi^-$ nonresonant	( 8 ± 4 ) × 10 <sup>-3</sup>		814
$K^- \pi^+ \pi^+ \pi^+ \pi^-$	[qq] ( 7.2 ± 1.0 ) × 10 <sup>-3</sup>		772
$\bar{K}^*(892)^0 \pi^+ \pi^+ \pi^-$	( 5.4 ± 2.3 ) × 10 <sup>-3</sup>		642
× B( $\bar{K}^{*0} \rightarrow K^- \pi^+$ )			
$\bar{K}^*(892)^0 \rho^0 \pi^+$	( 1.9 ± 1.1 ) × 10 <sup>-3</sup>		242
× B( $\bar{K}^{*0} \rightarrow K^- \pi^+$ )	( 1.9 ± 1.1 ) × 10 <sup>-3</sup>		242
$\bar{K}^*(892)^0 \pi^+ \pi^+ \pi^-$ no- $\rho$	( 2.9 ± 1.1 ) × 10 <sup>-3</sup>		642
× B( $\bar{K}^{*0} \rightarrow K^- \pi^+$ )			
$K^- \rho^0 \pi^+ \pi^+$	( 3.1 ± 0.9 ) × 10 <sup>-3</sup>		529
$K^- \pi^+ \pi^+ \pi^+ \pi^-$ nonresonant	< 2.3 × 10 <sup>-3</sup>	CL=90%	772
$K^- \pi^+ \pi^+ \pi^0 \pi^0$	( 2.2 ± 5.0 ) %		775
$\bar{K}^0 \pi^+ \pi^+ \pi^- \pi^0$	( 5.4 ± 3.0 ) %		773

$\overline{K}^0 \pi^+ \pi^+ \pi^+ \pi^- \pi^-$	$( 8 \pm 7 ) \times 10^{-4}$	714
$K^- \pi^+ \pi^+ \pi^+ \pi^- \pi^0$	$( 2.0 \pm 1.8 ) \times 10^{-3}$	718
$\overline{K}^0 \overline{K}^0 K^+$	$( 1.8 \pm 0.8 ) \%$	545

Fractions of some of the following modes with resonances have already appeared above as submodes of particular charged-particle modes.

$\overline{K}^0 \rho^+$	$( 6.6 \pm 2.5 ) \%$	680
$\overline{K}^0 a_1(1260)^+$	$( 8.0 \pm 1.7 ) \%$	328
$\overline{K}^0 a_2(1320)^+$	$< 3 \times 10^{-3}$ CL=90%	199
$\overline{K}^*(892)^0 \pi^+$	$( 1.90 \pm 0.19 ) \%$	712
$\overline{K}^*(892)^0 \rho^+$ total	[rr] $( 2.1 \pm 1.3 ) \%$	423
$\overline{K}^*(892)^0 \rho^+$ S-wave	[rr] $( 1.6 \pm 1.6 ) \%$	423
$\overline{K}^*(892)^0 \rho^+$ P-wave	$< 1 \times 10^{-3}$ CL=90%	423
$\overline{K}^*(892)^0 \rho^+$ D-wave	$( 10 \pm 7 ) \times 10^{-3}$	423
$\overline{K}^*(892)^0 \rho^+$ D-wave longitudinal	$< 7 \times 10^{-3}$ CL=90%	423
$\overline{K}_1(1270)^0 \pi^+$	$< 7 \times 10^{-3}$ CL=90%	487
$\overline{K}_1(1400)^0 \pi^+$	$( 4.9 \pm 1.2 ) \%$	390
$\overline{K}^*(1410)^0 \pi^+$	$< 7 \times 10^{-3}$ CL=90%	382
$\overline{K}_0^*(1430)^0 \pi^+$	$( 3.7 \pm 0.4 ) \%$	368
$\overline{K}^*(1680)^0 \pi^+$	$( 1.43 \pm 0.30 ) \%$	65
$\overline{K}^*(892)^0 \pi^+ \pi^0$ total	$( 6.7 \pm 1.4 ) \%$	687
$\overline{K}^*(892)^0 \pi^+ \pi^0$ 3-body	[rr] $( 4.2 \pm 1.4 ) \%$	687
$K^*(892)^- \pi^+ \pi^+$ 3-body	$( 2.0 \pm 0.9 ) \%$	688
$K^- \rho^+ \pi^+$ total	$( 3.1 \pm 1.1 ) \%$	616
$K^- \rho^+ \pi^+$ 3-body	$( 1.1 \pm 0.4 ) \%$	616
$\overline{K}^0 \rho^0 \pi^+$ total	$( 4.2 \pm 0.9 ) \%$ CL=90%	614
$\overline{K}^0 \rho^0 \pi^+$ 3-body	$( 5 \pm 5 ) \times 10^{-3}$	614
$\overline{K}^0 f_0(980) \pi^+$	$< 5 \times 10^{-3}$ CL=90%	461
$\overline{K}^*(892)^0 \pi^+ \pi^+ \pi^-$	$( 8.1 \pm 3.4 ) \times 10^{-3}$ S=1.7	642
$\overline{K}^*(892)^0 \rho^0 \pi^+$	$( 2.9 \pm 1.7 ) \times 10^{-3}$ S=1.8	242
$\overline{K}^*(892)^0 \pi^+ \pi^+ \pi^-$ no- $\rho$	$( 4.3 \pm 1.7 ) \times 10^{-3}$	642
$K^- \rho^0 \pi^+ \pi^+$	$( 3.1 \pm 0.9 ) \times 10^{-3}$	529

### Pionic modes

$\pi^+ \pi^0$	$( 2.5 \pm 0.7 ) \times 10^{-3}$	925
$\pi^+ \pi^+ \pi^-$	$( 3.6 \pm 0.4 ) \times 10^{-3}$	908
$\rho^0 \pi^+$	$( 1.05 \pm 0.31 ) \times 10^{-3}$	769
$\pi^+ \pi^+ \pi^-$ nonresonant	$( 2.2 \pm 0.4 ) \times 10^{-3}$	908
$\pi^+ \pi^+ \pi^- \pi^0$	$( 1.9 \pm 1.5 ) \%$	882
$\eta \pi^+ \times B(\eta \rightarrow \pi^+ \pi^- \pi^0)$	$( 6.9 \pm 1.4 ) \times 10^{-4}$	848
$\omega \pi^+ \times B(\omega \rightarrow \pi^+ \pi^- \pi^0)$	$< 6 \times 10^{-3}$ CL=90%	764
$\pi^+ \pi^+ \pi^+ \pi^- \pi^-$	$( 2.1 \pm 0.4 ) \times 10^{-3}$	845
$\pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^0$	$( 2.9 \pm 2.9 ) \times 10^{-3}$	799

Fractions of some of the following modes with resonances have already appeared above as submodes of particular charged-particle modes.

$\eta\pi^+$	$( 3.0 \pm 0.6 ) \times 10^{-3}$		848
$\rho^0\pi^+$	$( 1.05 \pm 0.31 ) \times 10^{-3}$		769
$\omega\pi^+$	$< 7$	$\times 10^{-3}$ CL=90%	764
$\eta\rho^+$	$< 7$	$\times 10^{-3}$ CL=90%	658
$\eta'(958)\pi^+$	$( 5.0 \pm 1.0 ) \times 10^{-3}$		680
$\eta'(958)\rho^+$	$< 5$	$\times 10^{-3}$ CL=90%	355

### Hadronic modes with a $K\bar{K}$ pair

$K^+\bar{K}^0$	$( 7.4 \pm 1.0 ) \times 10^{-3}$		792
$K^+K^-\pi^+$	[ <i>qq</i> ] $( 8.7 \pm 0.7 ) \times 10^{-3}$		744
$\phi\pi^+ \times B(\phi \rightarrow K^+K^-)$	$( 3.0 \pm 0.3 ) \times 10^{-3}$		647
$K^+\bar{K}^*(892)^0$ $\times B(\bar{K}^{*0} \rightarrow K^-\pi^+)$	$( 2.8 \pm 0.4 ) \times 10^{-3}$		610
$K^+K^-\pi^+$ nonresonant	$( 4.5 \pm 0.9 ) \times 10^{-3}$		744
$K^0\bar{K}^0\pi^+$	—		741
$K^*(892)^+\bar{K}^0$ $\times B(K^{*+} \rightarrow K^0\pi^+)$	$( 2.1 \pm 1.0 ) \%$		611
$K^+K^-\pi^+\pi^0$	—		682
$\phi\pi^+\pi^0 \times B(\phi \rightarrow K^+K^-)$	$( 1.1 \pm 0.5 ) \%$		619
$\phi\rho^+ \times B(\phi \rightarrow K^+K^-)$	$< 7$	$\times 10^{-3}$ CL=90%	268
$K^+K^-\pi^+\pi^0$ non- $\phi$	$( 1.5 \pm 0.7 ) \%$		682
$K^+\bar{K}^0\pi^+\pi^-$	$< 2$	$\%$ CL=90%	678
$K^0K^-\pi^+\pi^+$	$( 1.0 \pm 0.6 ) \%$		678
$K^*(892)^+\bar{K}^*(892)^0$ $\times B^2(K^{*+} \rightarrow K^0\pi^+)$	$( 1.2 \pm 0.5 ) \%$		273
$K^0K^-\pi^+\pi^+$ non- $K^*\bar{K}^{*0}$	$< 7.9$	$\times 10^{-3}$ CL=90%	678
$K^+K^-\pi^+\pi^+\pi^-$	—		600
$\phi\pi^+\pi^+\pi^-$ $\times B(\phi \rightarrow K^+K^-)$	$< 1$	$\times 10^{-3}$ CL=90%	565
$K^+K^-\pi^+\pi^+\pi^-$ nonresonant	$< 3$	$\%$ CL=90%	600

Fractions of the following modes with resonances have already appeared above as submodes of particular charged-particle modes.

$\phi\pi^+$	$( 6.1 \pm 0.6 ) \times 10^{-3}$		647
$\phi\pi^+\pi^0$	$( 2.3 \pm 1.0 ) \%$		619
$\phi\rho^+$	$< 1.4$	$\%$ CL=90%	268
$\phi\pi^+\pi^+\pi^-$	$< 2$	$\times 10^{-3}$ CL=90%	565
$K^+\bar{K}^*(892)^0$	$( 4.2 \pm 0.5 ) \times 10^{-3}$		610
$K^*(892)^+\bar{K}^0$	$( 3.2 \pm 1.5 ) \%$		611
$K^*(892)^+\bar{K}^*(892)^0$	$( 2.6 \pm 1.1 ) \%$		273

**Doubly Cabibbo suppressed (DC) modes,  
 $\Delta C = 1$  weak neutral current (C1) modes, or  
 Lepton Family number (LF) or Lepton number (L) violating modes**

$K^+ \pi^+ \pi^-$	DC	$(6.8 \pm 1.5) \times 10^{-4}$	845
$K^+ \rho^0$	DC	$(2.5 \pm 1.2) \times 10^{-4}$	681
$K^*(892)^0 \pi^+$	DC	$(3.6 \pm 1.6) \times 10^{-4}$	712
$K^+ \pi^+ \pi^-$ nonresonant	DC	$(2.4 \pm 1.2) \times 10^{-4}$	845
$K^+ K^+ K^-$	DC	$< 1.4 \times 10^{-4}$	CL=90% 550
$\phi K^+$	DC	$< 1.3 \times 10^{-4}$	CL=90% 527
$\pi^+ e^+ e^-$	C1	$< 5.2 \times 10^{-5}$	CL=90% 929
$\pi^+ \mu^+ \mu^-$	C1	$< 1.5 \times 10^{-5}$	CL=90% 917
$\rho^+ \mu^+ \mu^-$	C1	$< 5.6 \times 10^{-4}$	CL=90% 759
$K^+ e^+ e^-$	[ss]	$< 2.0 \times 10^{-4}$	CL=90% 869
$K^+ \mu^+ \mu^-$	[ss]	$< 4.4 \times 10^{-5}$	CL=90% 856
$\pi^+ e^\pm \mu^\mp$	LF [ee]	$< 3.4 \times 10^{-5}$	CL=90% 926
$K^+ e^\pm \mu^\mp$	LF [ee]	$< 6.8 \times 10^{-5}$	CL=90% 866
$\pi^- e^+ e^+$	L	$< 9.6 \times 10^{-5}$	CL=90% 929
$\pi^- \mu^+ \mu^+$	L	$< 1.7 \times 10^{-5}$	CL=90% 917
$\pi^- e^+ \mu^+$	L	$< 5.0 \times 10^{-5}$	CL=90% 926
$\rho^- \mu^+ \mu^+$	L	$< 5.6 \times 10^{-4}$	CL=90% 759
$K^- e^+ e^+$	L	$< 1.2 \times 10^{-4}$	CL=90% 869
$K^- \mu^+ \mu^+$	L	$< 1.2 \times 10^{-4}$	CL=90% 856
$K^- e^+ \mu^+$	L	$< 1.3 \times 10^{-4}$	CL=90% 866
$K^*(892)^- \mu^+ \mu^+$	L	$< 8.5 \times 10^{-4}$	CL=90% 703

**$D^0$**

$$I(J^P) = \frac{1}{2}(0^-)$$

Mass  $m = 1864.5 \pm 0.5$  MeV (S = 1.1)

$m_{D^\pm} - m_{D^0} = 4.79 \pm 0.10$  MeV (S = 1.1)

Mean life  $\tau = (0.4126 \pm 0.0028) \times 10^{-12}$  s

$c\tau = 123.7$   $\mu\text{m}$

$|m_{D_1^0} - m_{D_2^0}| < 7 \times 10^{10} \hbar \text{ s}^{-1}$ , CL = 95% [tt]

$(\Gamma_{D_1^0} - \Gamma_{D_2^0})/\Gamma_{D^0}$ :  $-0.116 < \Delta\Gamma/\Gamma < 0.020$ , CL = 95% [tt]

$\Gamma(K^+ \ell^- \bar{\nu}_\ell \text{ (via } \bar{D}^0)) / \Gamma(K^- \ell^+ \nu_\ell) < 0.005$ , CL = 90%

$\Gamma(K^+ \pi^- \text{ (via } \bar{D}^0)) / \Gamma(K^- \pi^+) < 4.1 \times 10^{-4}$ , CL = 95%

**CP-violation decay-rate asymmetries**

$$A_{CP}(K^+ K^-) = 0.026 \pm 0.035$$

$$A_{CP}(\pi^+ \pi^-) = -0.05 \pm 0.08$$

$$A_{CP}(K_S^0 \phi) = -0.03 \pm 0.09$$

$$A_{CP}(K_S^0 \pi^0) = -0.018 \pm 0.030$$

$$A_{CP}(K^\pm \pi^\mp) = 0.02 \pm 0.20$$

$\bar{D}^0$  modes are charge conjugates of the modes below.

<b>D<sup>0</sup> DECAY MODES</b>	Fraction ( $\Gamma_i/\Gamma$ )	Scale factor/ Confidence level	$p$ (MeV/c)
<b>Inclusive modes</b>			
$e^+$ anything	( 6.75±0.29 ) %		—
$\mu^+$ anything	( 6.6 ±0.8 ) %		—
$K^-$ anything	(53 ±4 ) %	S=1.3	—
$\bar{K}^0$ anything + $K^0$ anything	(42 ±5 ) %		—
$K^+$ anything	( 3.4 $^{+0.6}_{-0.4}$ ) %		—
$\eta$ anything	[nn] < 13 %	CL=90%	—
<b>Semileptonic modes</b>			
$K^- \ell^+ \nu_\ell$	[oo] ( 3.47±0.17 ) %	S=1.3	867
$K^- e^+ \nu_e$	( 3.64±0.18 ) %		867
$K^- \mu^+ \nu_\mu$	( 3.22±0.17 ) %		863
$K^- \pi^0 e^+ \nu_e$	( 1.6 $^{+1.3}_{-0.5}$ ) %		861
$\bar{K}^0 \pi^- e^+ \nu_e$	( 2.8 $^{+1.7}_{-0.9}$ ) %		860
$\bar{K}^*(892)^- e^+ \nu_e$ × B( $K^{*-} \rightarrow \bar{K}^0 \pi^-$ )	( 1.35±0.22 ) %		719
$K^- \pi^+ \pi^- \mu^+ \nu_\mu$	< 1.2 × 10 <sup>-3</sup>	CL=90%	821
$(\bar{K}^*(892)\pi)^- \mu^+ \nu_\mu$	< 1.4 × 10 <sup>-3</sup>	CL=90%	693
$\pi^- e^+ \nu_e$	( 3.7 ±0.6 ) × 10 <sup>-3</sup>		927
A fraction of the following resonance mode has already appeared above as a submode of a charged-particle mode.			
$K^*(892)^- e^+ \nu_e$	( 2.02±0.33 ) %		719

### Hadronic modes with a $\bar{K}$ or $\bar{K}K\bar{K}$

$K^- \pi^+$		( 3.83 ± 0.09 ) %	861
$\bar{K}^0 \pi^0$		( 2.11 ± 0.21 ) %	S=1.1 860
$\bar{K}^0 \pi^+ \pi^-$	[qq]	( 5.4 ± 0.4 ) %	S=1.2 842
$\bar{K}^0 \rho^0$		( 1.21 ± 0.17 ) %	676
$\bar{K}^0 f_0(980)$		( 3.0 ± 0.8 ) × 10 <sup>-3</sup>	549
× B( $f_0 \rightarrow \pi^+ \pi^-$ )			
$\bar{K}^0 f_2(1270)$		( 2.4 ± 0.9 ) × 10 <sup>-3</sup>	263
× B( $f_2 \rightarrow \pi^+ \pi^-$ )			
$\bar{K}^0 f_0(1370)$		( 4.3 ± 1.3 ) × 10 <sup>-3</sup>	—
× B( $f_0 \rightarrow \pi^+ \pi^-$ )			
$K^*(892)^- \pi^+$		( 3.4 ± 0.3 ) %	711
× B( $K^{*-} \rightarrow \bar{K}^0 \pi^-$ )			
$K_0^*(1430)^- \pi^+$		( 6.4 ± 1.6 ) × 10 <sup>-3</sup>	364
× B( $K_0^{*-}(1430)^- \rightarrow \bar{K}^0 \pi^-$ )			
$\bar{K}^0 \pi^+ \pi^-$ nonresonant		( 1.47 ± 0.24 ) %	842
$K^- \pi^+ \pi^0$	[qq]	(13.9 ± 0.9 ) %	S=1.3 844
$K^- \rho^+$		(10.8 ± 1.0 ) %	678
$K^*(892)^- \pi^+$		( 1.7 ± 0.2 ) %	711
× B( $K^{*-} \rightarrow K^- \pi^0$ )			
$\bar{K}^*(892)^0 \pi^0$		( 2.1 ± 0.3 ) %	709
× B( $\bar{K}^{*0} \rightarrow K^- \pi^+$ )			
$K^- \pi^+ \pi^0$ nonresonant		( 6.9 ± 2.5 ) × 10 <sup>-3</sup>	844
$\bar{K}^0 \pi^0 \pi^0$		—	843
$\bar{K}^*(892)^0 \pi^0$		( 1.1 ± 0.2 ) %	709
× B( $\bar{K}^{*0} \rightarrow \bar{K}^0 \pi^0$ )			
$\bar{K}^0 \pi^0 \pi^0$ nonresonant		( 7.8 ± 2.0 ) × 10 <sup>-3</sup>	843
$K^- \pi^+ \pi^+ \pi^-$	[qq]	( 7.49 ± 0.31 ) %	812
$K^- \pi^+ \rho^0$ total		( 6.3 ± 0.4 ) %	612
$K^- \pi^+ \rho^0$ 3-body		( 4.7 ± 2.1 ) × 10 <sup>-3</sup>	612
$\bar{K}^*(892)^0 \rho^0$		( 9.8 ± 2.2 ) × 10 <sup>-3</sup>	418
× B( $\bar{K}^{*0} \rightarrow K^- \pi^+$ )			
$K^- a_1(1260)^+$		( 3.6 ± 0.6 ) %	327
× B( $a_1(1260)^+ \rightarrow \pi^+ \pi^+ \pi^-$ )			
$\bar{K}^*(892)^0 \pi^+ \pi^-$ total		( 1.5 ± 0.4 ) %	683
× B( $\bar{K}^{*0} \rightarrow K^- \pi^+$ )			
$\bar{K}^*(892)^0 \pi^+ \pi^-$ 3-body		( 9.5 ± 2.1 ) × 10 <sup>-3</sup>	683
× B( $\bar{K}^{*0} \rightarrow K^- \pi^+$ )			
$K_1(1270)^- \pi^+$	[rr]	( 3.6 ± 1.0 ) × 10 <sup>-3</sup>	483
× B( $K_1(1270)^- \rightarrow K^- \pi^+ \pi^-$ )			
$K^- \pi^+ \pi^+ \pi^-$ nonresonant		( 1.74 ± 0.25 ) %	812
$\bar{K}^0 \pi^+ \pi^- \pi^0$	[qq]	(10.0 ± 1.2 ) %	812



$\overline{K}^0 \eta \times B(\eta \rightarrow \pi^+ \pi^- \pi^0)$	$( 1.6 \pm 0.3 ) \times 10^{-3}$	772
$\overline{K}^0 \omega \times B(\omega \rightarrow \pi^+ \pi^- \pi^0)$	$( 1.9 \pm 0.4 ) \%$	670
$K^*(892)^- \rho^+$	$( 4.1 \pm 1.6 ) \%$	422
$\times B(K^{*-} \rightarrow \overline{K}^0 \pi^-)$		
$\overline{K}^*(892)^0 \rho^0$	$( 4.9 \pm 1.1 ) \times 10^{-3}$	418
$\times B(\overline{K}^{*0} \rightarrow \overline{K}^0 \pi^0)$		
$K_1(1270)^- \pi^+$	$( 5.1 \pm 1.4 ) \times 10^{-3}$	483
$\times B(K_1(1270)^- \rightarrow \overline{K}^0 \pi^- \pi^0)$		
$\overline{K}^*(892)^0 \pi^+ \pi^-$ 3-body	$( 4.8 \pm 1.1 ) \times 10^{-3}$	683
$\times B(\overline{K}^{*0} \rightarrow \overline{K}^0 \pi^0)$		
$\overline{K}^0 \pi^+ \pi^- \pi^0$ nonresonant	$( 2.1 \pm 2.1 ) \%$	812
$K^- \pi^+ \pi^0 \pi^0$	$(15 \pm 5) \%$	815
$K^- \pi^+ \pi^+ \pi^- \pi^0$	$( 4.0 \pm 0.4 ) \%$	771
$\overline{K}^*(892)^0 \pi^+ \pi^- \pi^0$	$( 1.2 \pm 0.6 ) \%$	641
$\times B(\overline{K}^{*0} \rightarrow K^- \pi^+)$		
$\overline{K}^*(892)^0 \eta$	$( 2.9 \pm 0.8 ) \times 10^{-3}$	580
$\times B(\overline{K}^{*0} \rightarrow K^- \pi^+)$		
$\times B(\eta \rightarrow \pi^+ \pi^- \pi^0)$		
$K^- \pi^+ \omega \times B(\omega \rightarrow \pi^+ \pi^- \pi^0)$	$( 2.7 \pm 0.5 ) \%$	605
$\overline{K}^*(892)^0 \omega$	$( 7 \pm 3 ) \times 10^{-3}$	406
$\times B(\overline{K}^{*0} \rightarrow K^- \pi^+)$		
$\times B(\omega \rightarrow \pi^+ \pi^- \pi^0)$		
$\overline{K}^0 \pi^+ \pi^+ \pi^- \pi^-$	$( 5.8 \pm 1.6 ) \times 10^{-3}$	768
$\overline{K}^0 \pi^+ \pi^- \pi^0 \pi^0 (\pi^0)$	$(10.6 \pm 7.3 \pm 3.0) \%$	771
$\overline{K}^0 K^+ K^-$	$( 9.4 \pm 1.0 ) \times 10^{-3}$	544
$\overline{K}^0 \phi \times B(\phi \rightarrow K^+ K^-)$	$( 4.3 \pm 0.5 ) \times 10^{-3}$	520
$\overline{K}^0 K^+ K^-$ non- $\phi$	$( 5.1 \pm 0.8 ) \times 10^{-3}$	544
$K_S^0 K_S^0 K_S^0$	$( 8.3 \pm 1.5 ) \times 10^{-4}$	538
$K^+ K^- K^- \pi^+$	$( 2.1 \pm 0.5 ) \times 10^{-4}$	434
$K^+ K^- \overline{K}^0 \pi^0$	$( 7.2 \pm 4.8 \pm 3.5 ) \times 10^{-3}$	435

Fractions of many of the following modes with resonances have already appeared above as submodes of particular charged-particle modes. (Modes for which there are only upper limits and  $\overline{K}^*(892)\rho$  submodes only appear below.)

$\overline{K}^0 \eta$	$( 7.0 \pm 1.0 ) \times 10^{-3}$	772
$\overline{K}^0 \rho^0$	$( 1.21 \pm 0.17 ) \%$	676
$K^- \rho^+$	$(10.8 \pm 0.9) \%$	S=1.2 678
$\overline{K}^0 \omega$	$( 2.1 \pm 0.4 ) \%$	670
$\overline{K}^0 \eta'(958)$	$( 1.71 \pm 0.26 ) \%$	565
$\overline{K}^0 f_0(980)$	$( 5.7 \pm 1.6 ) \times 10^{-3}$	549
$\overline{K}^0 \phi$	$( 8.6 \pm 1.0 ) \times 10^{-3}$	520
$K^- a_1(1260)^+$	$( 7.3 \pm 1.1 ) \%$	327

$\overline{K}^0 a_1(1260)^0$	< 1.9	%	CL=90%	322
$\overline{K}^0 f_2(1270)$	( 4.1 ± 1.5 )	$\times 10^{-3}$		263
$K^- a_2(1320)^+$	< 2	$\times 10^{-3}$	CL=90%	197
$\overline{K}^0 f_0(1370)$	( 6.9 ± 2.1 )	$\times 10^{-3}$		—
$K^*(892)^- \pi^+$	( 5.0 ± 0.4 )	%	S=1.2	711
$\overline{K}^*(892)^0 \pi^0$	( 3.1 ± 0.4 )	%		709
$\overline{K}^*(892)^0 \pi^+ \pi^-$ total	( 2.2 ± 0.5 )	%		683
$\overline{K}^*(892)^0 \pi^+ \pi^-$ 3-body	( 1.42 ± 0.32 )	%		683
$K^- \pi^+ \rho^0$ total	( 6.3 ± 0.4 )	%		612
$K^- \pi^+ \rho^0$ 3-body	( 4.7 ± 2.1 )	$\times 10^{-3}$		612
$\overline{K}^*(892)^0 \rho^0$	( 1.46 ± 0.32 )	%		418
$\overline{K}^*(892)^0 \rho^0$ transverse	( 1.5 ± 0.5 )	%		418
$\overline{K}^*(892)^0 \rho^0$ S-wave	( 2.8 ± 0.6 )	%		418
$\overline{K}^*(892)^0 \rho^0$ S-wave long.	< 3	$\times 10^{-3}$	CL=90%	418
$\overline{K}^*(892)^0 \rho^0$ P-wave	< 3	$\times 10^{-3}$	CL=90%	418
$\overline{K}^*(892)^0 \rho^0$ D-wave	( 1.9 ± 0.6 )	%		418
$K^*(892)^- \rho^+$	( 6.1 ± 2.4 )	%		422
$K^*(892)^- \rho^+$ longitudinal	( 2.9 ± 1.2 )	%		422
$K^*(892)^- \rho^+$ transverse	( 3.2 ± 1.8 )	%		422
$K^*(892)^- \rho^+$ P-wave	< 1.5	%	CL=90%	422
$K^- \pi^+ f_0(980)$	< 1.1	%	CL=90%	459
$\overline{K}^*(892)^0 f_0(980)$	< 7	$\times 10^{-3}$	CL=90%	—
$K_1(1270)^- \pi^+$	[rr] ( 1.06 ± 0.29 )	%		483
$K_1(1400)^- \pi^+$	< 1.2	%	CL=90%	386
$\overline{K}_1(1400)^0 \pi^0$	< 3.7	%	CL=90%	387
$K^*(1410)^- \pi^+$	< 1.2	%	CL=90%	378
$K_0^*(1430)^- \pi^+$	( 1.04 ± 0.26 )	%		364
$K_2^*(1430)^- \pi^+$	< 8	$\times 10^{-3}$	CL=90%	367
$\overline{K}_2^*(1430)^0 \pi^0$	< 4	$\times 10^{-3}$	CL=90%	363
$\overline{K}^*(892)^0 \pi^+ \pi^- \pi^0$	( 1.8 ± 0.9 )	%		641
$\overline{K}^*(892)^0 \eta$	( 1.9 ± 0.5 )	%		580
$K^- \pi^+ \omega$	( 3.0 ± 0.6 )	%		605
$\overline{K}^*(892)^0 \omega$	( 1.1 ± 0.4 )	%		406
$K^- \pi^+ \eta'(958)$	( 7.0 ± 1.8 )	$\times 10^{-3}$		479
$\overline{K}^*(892)^0 \eta'(958)$	< 1.0	$\times 10^{-3}$	CL=90%	99

### Pionic modes

$\pi^+ \pi^-$	( 1.52 ± 0.09 )	$\times 10^{-3}$		922
$\pi^0 \pi^0$	( 8.4 ± 2.2 )	$\times 10^{-4}$		922
$\pi^+ \pi^- \pi^0$	( 1.6 ± 1.1 )	%	S=2.7	907
$\pi^+ \pi^+ \pi^- \pi^-$	( 7.3 ± 0.5 )	$\times 10^{-3}$		879
$\pi^+ \pi^+ \pi^- \pi^- \pi^0$	( 1.9 ± 0.4 )	%		844
$\pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^-$	( 4.0 ± 3.0 )	$\times 10^{-4}$		795

### Hadronic modes with a $K\bar{K}$ pair

$K^+K^-$	$(4.25 \pm 0.16) \times 10^{-3}$		791
$K^0\bar{K}^0$	$(6.5 \pm 1.8) \times 10^{-4}$	S=1.2	788
$K^0K^-\pi^+$	$(6.4 \pm 1.0) \times 10^{-3}$	S=1.1	739
$\bar{K}^*(892)^0K^0$ $\times B(\bar{K}^{*0} \rightarrow K^-\pi^+)$	$< 1.1 \times 10^{-3}$	CL=90%	605
$K^*(892)^+K^-$ $\times B(K^{*+} \rightarrow K^0\pi^+)$	$(2.3 \pm 0.5) \times 10^{-3}$		610
$K^0K^-\pi^+$ nonresonant	$(2.3 \pm 2.3) \times 10^{-3}$		739
$\bar{K}^0K^+\pi^-$	$(5.0 \pm 1.0) \times 10^{-3}$		739
$K^*(892)^0\bar{K}^0$ $\times B(K^{*0} \rightarrow K^+\pi^-)$	$< 5 \times 10^{-4}$	CL=90%	605
$K^*(892)^-K^+$ $\times B(K^{*-} \rightarrow \bar{K}^0\pi^-)$	$(1.2 \pm 0.7) \times 10^{-3}$		610
$\bar{K}^0K^+\pi^-$ nonresonant	$(3.8 \pm_{-1.9}^{+2.3}) \times 10^{-3}$		739
$K^+K^-\pi^0$	$(1.3 \pm 0.4) \times 10^{-3}$		742
$K_S^0K_S^0\pi^0$	$< 5.9 \times 10^{-4}$		739
$K^+K^-\pi^+\pi^-$	[uu] $(2.50 \pm 0.23) \times 10^{-3}$		676
$\phi\pi^+\pi^- \times B(\phi \rightarrow K^+K^-)$	$(5.3 \pm 1.4) \times 10^{-4}$		614
$\phi\rho^0 \times B(\phi \rightarrow K^+K^-)$	$(3.0 \pm 1.6) \times 10^{-4}$		260
$K^+K^-\rho^0$ 3-body	$(9.0 \pm 2.3) \times 10^{-4}$		309
$K^*(892)^0K^-\pi^+ + c.c.$	[vv] $< 5 \times 10^{-4}$		528
$\times B(K^{*0} \rightarrow K^+\pi^-)$			
$K^*(892)^0\bar{K}^*(892)^0$ $\times B^2(K^{*0} \rightarrow K^+\pi^-)$	$(6 \pm 2) \times 10^{-4}$		257
$K^+K^-\pi^+\pi^-$ non- $\phi$	—		676
$K^+K^-\pi^+\pi^-$ nonresonant	$< 8 \times 10^{-4}$	CL=90%	676
$K^0\bar{K}^0\pi^+\pi^-$	$(6.8 \pm 2.7) \times 10^{-3}$		673
$K^+K^-\pi^+\pi^-\pi^0$	$(3.1 \pm 2.0) \times 10^{-3}$		600

Fractions of most of the following modes with resonances have already appeared above as submodes of particular charged-particle modes.

$\bar{K}^*(892)^0K^0$	$< 1.6 \times 10^{-3}$	CL=90%	605
$K^*(892)^+K^-$	$(3.5 \pm 0.8) \times 10^{-3}$		610
$K^*(892)^0\bar{K}^0$	$< 8 \times 10^{-4}$	CL=90%	605
$K^*(892)^-K^+$	$(1.8 \pm 1.0) \times 10^{-3}$		610
$\phi\pi^0$	$< 1.4 \times 10^{-3}$	CL=90%	644
$\phi\eta$	$< 2.8 \times 10^{-3}$	CL=90%	489
$\phi\omega$	$< 2.1 \times 10^{-3}$	CL=90%	239
$\phi\pi^+\pi^-$	$(1.07 \pm 0.28) \times 10^{-3}$		614
$\phi\rho^0$	$(6 \pm 3) \times 10^{-4}$		260
$\phi\pi^+\pi^-$ 3-body	$(7 \pm 5) \times 10^{-4}$		614
$K^*(892)^0K^-\pi^+ + c.c.$	[vv] $< 7 \times 10^{-4}$	CL=90%	—
$K^*(892)^0\bar{K}^*(892)^0$	$(1.4 \pm 0.5) \times 10^{-3}$		257

**Radiative modes**

$\rho^0 \gamma$	< 2.4	$\times 10^{-4}$	CL=90%	773
$\omega \gamma$	< 2.4	$\times 10^{-4}$	CL=90%	768
$\phi \gamma$	< 1.9	$\times 10^{-4}$	CL=90%	654
$\overline{K}^*(892)^0 \gamma$	< 7.6	$\times 10^{-4}$	CL=90%	717

**Doubly Cabibbo suppressed (DC) modes,  
 $\Delta C = 2$  forbidden via mixing (C2M) modes,  
 $\Delta C = 1$  weak neutral current (C1) modes, or  
Lepton Family number (LF) violating modes**

$K^+ \ell^- \bar{\nu}_\ell$ (via $\overline{D}^0$ )	C2M	< 1.7	$\times 10^{-4}$	CL=90%	—
$K^+ \pi^-$	DC	( 1.46 ± 0.30 )	$\times 10^{-4}$		861
$K^+ \pi^-$ (via $\overline{D}^0$ )	C2M	< 1.6	$\times 10^{-5}$	CL=95%	861
$K^+ \pi^- \pi^+ \pi^-$	DC	( 1.9 ± 2.6 )	$\times 10^{-4}$		812
$K^+ \pi^- \pi^+ \pi^-$ (via $\overline{D}^0$ )	C2M	< 4	$\times 10^{-4}$	CL=90%	812
$K^+ \pi^-$ or $K^+ \pi^- \pi^+ \pi^-$ (via $\overline{D}^0$ )		< 1.0	$\times 10^{-3}$	CL=90%	—
$\mu^-$ anything (via $\overline{D}^0$ )	C2M	< 4	$\times 10^{-4}$	CL=90%	—
$e^+ e^-$	C1	< 6.2	$\times 10^{-6}$	CL=90%	932
$\mu^+ \mu^-$	C1	< 4.1	$\times 10^{-6}$	CL=90%	926
$\pi^0 e^+ e^-$	C1	< 4.5	$\times 10^{-5}$	CL=90%	927
$\pi^0 \mu^+ \mu^-$	C1	< 1.8	$\times 10^{-4}$	CL=90%	915
$\eta e^+ e^-$	C1	< 1.1	$\times 10^{-4}$	CL=90%	852
$\eta \mu^+ \mu^-$	C1	< 5.3	$\times 10^{-4}$	CL=90%	838
$\rho^0 e^+ e^-$	C1	< 1.0	$\times 10^{-4}$	CL=90%	773
$\rho^0 \mu^+ \mu^-$	C1	< 2.3	$\times 10^{-4}$	CL=90%	756
$\omega e^+ e^-$	C1	< 1.8	$\times 10^{-4}$	CL=90%	768
$\omega \mu^+ \mu^-$	C1	< 8.3	$\times 10^{-4}$	CL=90%	751
$\phi e^+ e^-$	C1	< 5.2	$\times 10^{-5}$	CL=90%	654
$\phi \mu^+ \mu^-$	C1	< 4.1	$\times 10^{-4}$	CL=90%	631
$\overline{K}^0 e^+ e^-$	[ss]	< 1.1	$\times 10^{-4}$	CL=90%	866
$\overline{K}^0 \mu^+ \mu^-$	[ss]	< 2.6	$\times 10^{-4}$	CL=90%	852
$\overline{K}^*(892)^0 e^+ e^-$	[ss]	< 1.4	$\times 10^{-4}$	CL=90%	717
$\overline{K}^*(892)^0 \mu^+ \mu^-$	[ss]	< 1.18	$\times 10^{-3}$	CL=90%	698
$\pi^+ \pi^- \pi^0 \mu^+ \mu^-$	C1	< 8.1	$\times 10^{-4}$	CL=90%	863
$\mu^\pm e^\mp$	LF [ee]	< 8.1	$\times 10^{-6}$	CL=90%	929
$\pi^0 e^\pm \mu^\mp$	LF [ee]	< 8.6	$\times 10^{-5}$	CL=90%	924
$\eta e^\pm \mu^\mp$	LF [ee]	< 1.0	$\times 10^{-4}$	CL=90%	848
$\rho^0 e^\pm \mu^\mp$	LF [ee]	< 4.9	$\times 10^{-5}$	CL=90%	769
$\omega e^\pm \mu^\mp$	LF [ee]	< 1.2	$\times 10^{-4}$	CL=90%	764
$\phi e^\pm \mu^\mp$	LF [ee]	< 3.4	$\times 10^{-5}$	CL=90%	648
$\overline{K}^0 e^\pm \mu^\mp$	LF [ee]	< 1.0	$\times 10^{-4}$	CL=90%	862
$\overline{K}^*(892)^0 e^\pm \mu^\mp$	LF [ee]	< 1.0	$\times 10^{-4}$	CL=90%	712

### $D^*(2007)^0$

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

$I, J, P$  need confirmation.

Mass  $m = 2006.7 \pm 0.5$  MeV ( $S = 1.1$ )

$m_{D^{*0}} - m_{D^0} = 142.12 \pm 0.07$  MeV

Full width  $\Gamma < 2.1$  MeV, CL = 90%

$\bar{D}^*(2007)^0$  modes are charge conjugates of modes below.

$D^*(2007)^0$ DECAY MODES	Fraction ( $\Gamma_i/\Gamma$ )	$p$ (MeV/c)
$D^0 \pi^0$	(61.9±2.9) %	43
$D^0 \gamma$	(38.1±2.9) %	137

### $D^*(2010)^\pm$

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

$I, J, P$  need confirmation.

Mass  $m = 2010.0 \pm 0.5$  MeV ( $S = 1.1$ )

$m_{D^*(2010)^+} - m_{D^+} = 140.64 \pm 0.10$  MeV ( $S = 1.1$ )

$m_{D^*(2010)^+} - m_{D^0} = 145.436 \pm 0.016$  MeV

Full width  $\Gamma < 0.131$  MeV, CL = 90%

$D^*(2010)^-$  modes are charge conjugates of the modes below.

$D^*(2010)^\pm$ DECAY MODES	Fraction ( $\Gamma_i/\Gamma$ )	$p$ (MeV/c)
$D^0 \pi^+$	(67.7±0.5) %	39
$D^+ \pi^0$	(30.7±0.5) %	38
$D^+ \gamma$	( 1.6±0.4) %	136

### $D_1(2420)^0$

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

$I, J, P$  need confirmation.

Mass  $m = 2422.2 \pm 1.8$  MeV ( $S = 1.2$ )

Full width  $\Gamma = 18.9^{+4.6}_{-3.5}$  MeV

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

$D_1(2420)^0$ DECAY MODES	Fraction ( $\Gamma_i/\Gamma$ )	$p$ (MeV/c)
$D^*(2010)^+ \pi^-$	seen	355
$D^+ \pi^-$	not seen	474

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

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

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

$$\text{Mass } m = 2458.9 \pm 2.0 \text{ MeV} \quad (S = 1.2)$$

$$\text{Full width } \Gamma = 23 \pm 5 \text{ MeV}$$

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

<b><math>D_2^*(2460)^0</math> DECAY MODES</b>	Fraction ( $\Gamma_i/\Gamma$ )	$p$ (MeV/c)
$D^+ \pi^-$	seen	503
$D^*(2010)^+ \pi^-$	seen	387

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

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

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

$$\text{Mass } m = 2459 \pm 4 \text{ MeV} \quad (S = 1.7)$$

$$m_{D_2^*(2460)^\pm} - m_{D_2^*(2460)^0} = 0.9 \pm 3.3 \text{ MeV} \quad (S = 1.1)$$

$$\text{Full width } \Gamma = 25^{+8}_{-7} \text{ MeV}$$

$D_2^*(2460)^-$  modes are charge conjugates of modes below.

<b><math>D_2^*(2460)^\pm</math> DECAY MODES</b>	Fraction ( $\Gamma_i/\Gamma$ )	$p$ (MeV/c)
$D^0 \pi^+$	seen	508
$D^{*0} \pi^+$	seen	390