# CHARMED MESONS
# ($C = \pm1$)

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

## $D^{\pm}$

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

Mass $m = 1869.4 \pm 0.4$ MeV
Mean life $\tau = (1.057 \pm 0.015) \times 10^{-12}$ s
$c\tau = 317\ \mu$m

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

| $D^+$ DECAY MODES | | Fraction ($\Gamma_i/\Gamma$) | Scale factor/ Confidence level | $p$ (MeV/$c$) |
|---|---|---|---|---|
| **Inclusive modes** | | | | |
| $e^+$ anything | | $(17.2\ \pm1.9\ )\ \%$ | | – |
| $K^-$ anything | | $(24.2\ \pm2.8\ )\ \%$ | S=1.4 | – |
| $\overline{K}^0$ anything + $K^0$ anything | | $(59\ \pm7\ )\ \%$ | | – |
| $K^+$ anything | | $(5.8\ \pm1.4\ )\ \%$ | | – |
| $\eta$ anything | [gg] | $< 13\ \%$ | CL=90% | – |
| **Leptonic and semileptonic modes** | | | | |
| $\mu^+\nu_\mu$ | | $< 7.2 \times 10^{-4}$ | CL=90% | 932 |
| $\overline{K}^0$ "$e^+$" $\nu_e$ | [hh] | $(6.7\ \pm0.8\ )\ \%$ | | 868 |
| $\overline{K}^0 e^+\nu_e$ | | $(6.6\ \pm0.9\ )\ \%$ | | 868 |
| $\overline{K}^0 \mu^+\nu_\mu$ | | $(7.0\ ^{+3.0}_{-2.0})\ \%$ | | 865 |
| $\overline{K}^0 \ell^+\nu_\ell$ | | $(6.7\ \pm3.5\ )\ \%$ | | – |
| $K^-\pi^+e^+\nu_e$ | | $(4.2\ ^{+0.9}_{-0.7})\ \%$ | | 863 |
| $\overline{K}^*(892)^0 e^+\nu_e$ $\times$ B($\overline{K}^{*0} \to K^-\pi^+$) | | $(3.2\ \pm0.33)\ \%$ | | 720 |
| $K^-\pi^+e^+\nu_e$ nonresonant | | $< 7 \times 10^{-3}$ | CL=90% | 863 |
| $K^-\pi^+\mu^+\nu_\mu$ | | $(3.2\ \pm1.7\ )\ \%$ | | 851 |
| $\overline{K}^*(892)^0 \mu^+\nu_\mu$ $\times$ B($\overline{K}^{*0} \to K^-\pi^+$) | | $(3.0\ \pm0.4\ )\ \%$ | | 715 |
| $K^-\pi^+\mu^+\nu_\mu$ nonresonant | | $(2.7\ \pm1.1\ ) \times 10^{-3}$ | | 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 |
| $\pi^0\ell^+\nu_\ell$ | [ii] | $(5.7\ \pm2.2\ ) \times 10^{-3}$ | | – |