

Reactions follow particle list.

$$\text{Pi}^+ = \text{du}$$

$$\text{Pi}^- = \text{d}^*\text{u}^* \quad (* \text{ indicates antiparticle})$$

$$\text{Pi}^0 = \text{Pi}^0{}^* = \text{uu}^*$$

$$\text{Pi}^0 = \text{Pi}^0{}^* = \text{dd}^*$$

$$\text{P} = \text{duu}$$

$$\text{P}^* = \text{d}^*\text{u}^*\text{u}^*$$

$$\text{N} = \text{dud}^*$$

$$\text{N}^* = \text{d}^*\text{u}^*\text{d}$$

$$\text{Kaon}^0 = \text{Kaon}^0{}^* = \text{d}^*\text{u}^*.\text{du} = \text{dd}^*.\text{uu}^*$$

$$\text{Kaon}^+ = \text{du.uu}^*$$

$$\text{Kaon}^- = \text{d}^*\text{u}^*.\text{uu}^*$$

$$\text{Kaon}^{\prime+} = \text{du.dd}^*$$

$$\text{Kaon}^{\prime-} = \text{d}^*\text{u}^*.\text{dd}^*$$

$$\text{Lambda}^0 = \text{duu.d}^*\text{u}^* = \text{dud}^*.\text{uu}^*$$

$$\text{Lambda}^0{}^* = \text{d}^*\text{u}^*\text{u}^*.\text{du} = \text{d}^*\text{u}^*\text{d}.\text{uu}^*$$

$$\text{Sigma}^0 = \text{dud}^*.\text{dd}^*$$

$$\text{Sigma}^0{}^* = \text{d}^*\text{u}^*\text{d}.\text{dd}^*$$

$$\text{Sigma}^- = \text{dud}^*.\text{d}^*\text{u}^*$$

$$\text{Sigma}^-{}^* = \text{d}^*\text{u}^*\text{d}.\text{du} \quad (\text{Positively charged})$$

$$\text{Sigma}^+ = \text{dud}^*.\text{du} = \text{duu.dd}^*$$

$$\text{Sigma}^+{}^* = \text{d}^*\text{u}^*\text{d}.\text{d}^*\text{u}^* = \text{d}^*\text{u}^*\text{u}^*.\text{dd}^* \quad (\text{Negatively charged})$$

$$\text{Delta}^0 = \text{duu.d}^*\text{u}^* = \text{dud}^*.\text{uu}^* \quad (\text{Apparently related to Lambda})$$

$$\text{Delta}^+ = \text{dud}^*.\text{du} = \text{duu.dd}^* \quad (\text{Apparently related to Sigma}^+)$$

$$\text{Delta}^- = \text{dud}^*.\text{d}^*\text{u}^* \quad (\text{Apparently related to Sigma}^-)$$

$$\text{Delta}^+ = \text{duu.du}$$

$$\text{Rho}^0 = \text{du.d}^*\text{u}^*.\text{uu}^* = \text{dd}^*.\text{uu}^*.\text{uu}^*$$

$$\text{Rho}^+ = \text{du.d}^*\text{u}^*.\text{du} = \text{du.dd}^*.\text{uu}^*$$

$$\text{Omega}^0 = \text{du.d}^*\text{u}^*.\text{dd}^* = \text{dd}^*.\text{dd}^*.\text{uu}^*$$

$$\begin{aligned}
\text{Phi}0 &= du.d^*u^*.du.d^*u^* = du.d^*u^*.dd^*.uu^* = dd^*.uu^*dd^*.uu^* \\
\text{Xi}0 &= duu.uu^*.d^*u^* = dud^*.uu^*.uu^* \\
\text{Xi}'0 &= duu.dd^*.d^*u^* = dud^*.d^*u^*.du = dud^*.dd^*.uu^* \\
\text{Xi}^- &= duu.d^*u^*.d^*u^* = dud^*.d^*u^*.uu^* \\
\text{Xi}'^- &= dud^*.d^*u^*.dd^* \\
\text{Omega}^- &= dud^*.d^*u^*.uu^*.uu^* = duu.d^*u^*.uu^*.d^*u^* \\
\text{Omega}'^- &= dud^*.d^*u^*.uu^*.dd^* = dud^*.d^*u^*.du.d^*u^* = duu.d^*u^*.dd^*.d^*u^*
\end{aligned}$$

REACTIONS

Reactions involving neutral pions or charged kaons can often accommodate either of the two variations of each ($\text{PI}0 = uu^*$ or $\text{PI}'0 = dd^*$; and e.g. $du.uu^*$ or $K^+ = du.dd^*$). For clarity the prior of each pair are used unless the latter are specifically required.

BEAM E-

E- P --> DELTA+ E-	dud*.du/E-	dd*
E- P --> N PI+ E-	dud*/du/E-	dd*
E- P --> DELTA++ PI- E-	duu.du/d^*u^*/E-	dd*uu*
E- P --> 2P P* E-	duu/duu/d^*u^*u^*/E-	dd*uu*uu*
E- P --> LAMBDA K+ E-	dud*.uu*/du.uu^*/E-	dd*uu*uu*
E- P --> SIGMA0 K+ E-	dud*.dd*/du.uu^*/E-	dd*dd*uu*
E- N --> P PI- E-	duu/d^*u^*/E-	uu*
E- N --> SIGMA- K+ E-	dud*.d^*u^*/du.uu^*/E-	dd*uu*uu*
E- DEUT --> P N E-	duu/dud*/E-	-
E- DEUT --> P P(SPECT) PI- E-	duu/duu/d^*u^*/E-	uu*
E- DEUT --> SIGMA- K+ P E-	dud*.d^*u^*/du.uu^*/duu/E-	dd*uu*uu*
E- DEUT --> SIGMA0 K+ N E-	dud*.dd*/du.uu^*/dud*/E-	dd*dd*uu*

BEAM Pion

PI+ P --> DELTA+ PI+	dud*.du/du	dd*
PI+ P --> N PI+ PI+	dud*/du/du	dd*
PI+ P --> P RHO+	duu/du.d^*u^*.du	dd*uu*
PI+ P --> DELTA0 PI+ PI+	dud*.uu^*/du/du	dd*uu*

PI+ P --> SIGMA+ K+
 PI+ P --> P K+ Ks
 PI+ P --> LAMBDA K+ PI+
 PI+ P --> DELTA+ RHO+
 PI+ P --> SIGMA0 K+ PI+
 PI+ P --> SIGMA+ K0 PI+
 PI+ P --> SIGMA- K+ PI+ PI+
 PI+ P --> N K+ K*0 PI+
 PI+ P --> LAMBDA K0 PI+ PI+
 PI+ P --> SIGMA0 K0 PI+ PI+
 PI+ P --> LAMBDA RHO+ K+
 PI+ P --> SIGMA- K0 PI+ PI+ PI+
 PI+ P --> N K0 K*0 PI+ PI+

dud*.du du.u*u
 duu/du.uu*/dd*uu*
 dud*.uu*/du.uu*/du
 dud*.du/du.d*u*.du
 dud*dd*/du.uu*/du
 dud*.du/dd*uu*/du
 dud*.d*u* /du.uu*/du/du
 dud*/du.uu*/dd*uu*/du
 dud*.uu*/du.d*u*/du/du
 dud*.dd* /dd*uu*/du/du
 dud*.uu*/du.d*u*.du/du.uu*
 dud*.d*u* /dd*uu*/du/du/du
 dud*/dd*uu*/dd*uu*/du/du

dd*uu*
 dd*uu*uu*
 dd*uu*uu*
 dd*dd*uu*
 dd*dd*uu*
 dd*dd*uu*
 dd*dd*uu*uu*
 dd*dd*uu*uu*
 dd*dd*uu*uu*
 dd*dd*dd*uu*
 dd*dd*uu*uu*uu*
 dd*dd*dd*uu*uu*
 dd*dd*dd*uu*uu*

PI+ N --> P PI0
 PI+ N --> P PI+ PI-
 PI+ N --> DELTA0 PI+
 PI+ N --> DELTA+ PI0
 PI+ N --> RHO0 P
 PI+ N --> LAMBDA K+
 PI+ N --> P PI+ PI- PI0
 PI+ N --> SIGMA0 K+
 PI+ N --> SIGMA+ K0
 PI+ N --> N 2PI+ PI-
 PI+ N --> OMEGA P
 PI+ N --> K+ K- P
 PI+ N --> PHI P
 PI+ N --> RHO0 DELTA+
 PI+ N --> RHO+ DELTA0

duu/dd*
 duu/du/d*u*
 dud*.uu*/du
 dud*.du/uu*
 du.d*u*.uu*/duu
 dud*.uu*/du.uu*
 duu/du/d*u*/dd*
 dud*.dd*/du.uu*
 dud*.du/du.d*u*
 dud*/du/du/d*u*
 du.d*u*.dd*/duu
 du.uu*/d*u*.uu*/duu
 du.d*u*.du.d*u*/duu
 du.d*u*.uu*/dud*.du
 du.d*u*.du/dud*.uu*

-
 uu*
 uu*
 uu*
 uu*uu*
 uu*uu*
 dd*uu*
 dd*uu*
 dd*uu*
 dd*uu*
 dd*uu*
 uu*uu*uu*
 dd*uu*uu*
 dd*uu*uu*
 dd*uu*uu*

PI+ DEUT --> P P
 PI+ DEUT --> N N PI+ PI+

duu/duu
 dud*/dud*/du/du

Loss of dd*
 dd*

PI+ HE --> P P P N
 PI+ HE3 --> P P P

duu/duu/duu/dud*
 duu/duu/duu

Loss of dd*
 Loss of dd*

PI- P --> N PI0
 PI- P --> N PI- PI+
 PI- P --> DELTA+ PI-
 PI- P --> DELTA- PI+

dud*/uu*
 dud*/d*u*/du
 dud*.du/d*u*
 dud*.d*u*/du

-
 dd*
 dd*
 dd*

PI- P --> DELTA++ PI- PI-	duu.du/d*u*/d*u*	dd*uu*
PI- P --> RHO- P	d*u*.du.d*u*/duu	dd*uu*
PI- P --> RHO0 N	du.d*u*.uu*/dud*	dd*uu*
PI- P --> LAMBDA K0	dud*.uu*/du.d*u*	dd*uu*
PI- P --> DEUT P*	duu.dud*/d*u*u*	dd*uu*
PI- P --> SIGMA- K+	dud*.d*u*/du.uu*	dd*uu*
PI- P --> SIGMA0 K0	dud*.dd*/dd*.uu*	dd*dd*
PI- P --> KS K- P	dd*.uu*/d*u*.uu*/duu	dd*uu*uu*
PI- P --> KS KS N	dd*.uu*/du.d*u*/dud*	dd*dd*uu*
PI- P --> RHO- DELTA++ PI-	d*u*.du.d*u*/duu.du/d*u*	dd*dd*uu*uu*
PI- P --> PHI PHI N	du.d*u*.du.d*u*/du.d*u*.du.d*u*/dud*	dd*dd*dd*dd*uu*uu*uu*

PI- N --> P PI- PI-	duu/d*u*/d*u*	uu*
PI- N --> DELTA0 PI-	dud*.uu*/d*u*	uu*
PI- N --> DELTA- PI+ PI-	dud*.d*u*/du/d*u*	dd*.uu*
PI- N --> RHO- DELTA0	d*u*.du.d*u*/dud*.uu*	dd*.uu*.uu*
PI- N --> RHO0 DELTA-	du.d*u*.uu*/dud*.d*u*	dd*.uu*.uu*
PI- N --> RHO0 N PI-	du.d*u*.uu*/dud*/d*u*	dd*.uu*.uu*

PI- DEUT --> PI- PI- P P	duu/duu/d*u*/d*u*	Loss of uu*
PI- DEUT --> N P PI-	dud*/duu/d*u*	-
PI- DEUT --> N N	dud*/dud*	uu*
PI- DEUT --> TRITIUM P*	duu.dud*.dud*/d*u*u*	dd*uu*

PI- HE3 --> P N N	duu/dud*/dud*	Loss of uu*
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PI0 DEUT --> N P GAMMA	dud*/duu	Loss of uu*
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BEAM P

P P --> DELTA+ P	dud*.du/duu	dd*
P P --> DELTA++ N	duu.du/dud*	dd*
P P --> P N PI+	duu/dud*/du	dd*
P P --> DEUT PI+	duu/dud*/du	dd*
P P --> SIGMA+ K+ N	dud*.du/du.uu*/dud*	dd*dd*uu*
P P --> SIGMA+ K0 P	dud*.du/dd*.uu*/duu	dd*dd*uu*
P P --> SIGMA0 K+ P	dud*.dd*/du.uu*/duu	dd*dd*uu*
P P --> LAMBDA K+ P	dud*.uu*/du.uu*/duu	dd*uu*uu*
P P --> LAMBDA LAMBDA 2K+	dud*.uu*/dud*.uu*/du.uu*/du.uu*	dd*dd*uu*uu*uu*uu*

P N --> P P PI-
 P N --> DELTA+ P
 P N --> DELTA++ DELTA-

duu/duu/d*u*
 dud*.du/duu)
 duu.du/dud*.d*u*

uu*
 uu*
 dd*uu*

BEAM P*

P* P --> N N*

dud*/d*u*d

ee*

P* N --> PI0 PI-

uu*/d*u*

Loss of dd*

P* N --> PI+ PI- PI-

du/d*u*/d*u*

-

P* N --> DELTA0 P*

dud*.uu*/d*u*u*

uu*

P* N --> P* P PI-

d*u*u*/duu/d*u*

uu*

P* N --> DELTA+-- P

d*u*u*.d*u*/duu

uu*

P* N --> RHO- PI0

d*u*.du.d*u*/uu*

uu*

P* N --> OMEGA PI-

du.d*u*.dd*/d*u*

dd*

P* N --> PHI PI-

du.d*u*.du.d*u*/d*u*

dd*uu*

P* N --> RHO+ PI- PI-

du.d*u*.du/d*u*/d*u*

dd*uu*

P* N --> RHO0 PI- PI0

du.d*u*.u*u/d*u*/dd*

dd*uu*

P* N --> RHO- PI+ PI-

d*u*.du.d*u*/du/d*u*

dd*uu*

P* N --> RHO- RHO0

d*u*.du.d*u*/du.d*u*.uu*

dd*uu*uu*

P* N --> SIGMA*- K*0 N

d*u*d.d*u*/d*u*du/dud*

dd*dd*uu*

P* N --> SIGMA*- K*0 P PI-

d*u*d.d*u*/d*u*du/duu/d*u*

dd*dd*uu*uu*

P* N --> LAMBDA* K*0 N PI-

d*u*d.uu*/d*u*du/dud*/d*u*

dd*dd*uu*uu*

P* N --> SIGMA*+ K*0 N 2PI-

d*u*d.du/d*u*du/dud*/d*u*/d*u*

dd*dd*dd*uu*uu*

P* N --> LAMBDA* K*0 P 2PI-

d*u*d.uu*/d*u*du/duu/d*u*/d*u*

dd*dd*uu*uu*uu*

P* DEUT --> P PI-

duu/d*u*

Loss of dd*uu*

P* DEUT --> N PI0

dud*/uu*

Loss of dd*uu*

P* DEUT --> DELTA0 PI0

dud*.uu*/uu*

Loss of dd*

P* DEUT --> N PI+ PI-

dud*/du/d*u*

Loss of uu*

P* DEUT --> OMEGA N

dud*u*.uu*/dud*

-

P* DEUT --> N K+ K-

dud*/du.uu*/d*u*.uu*

uu*

P* DEUT --> LAMBDA K+ PI-

dud*.uu*/du.uu*/d*u*

uu*

BEAM N*

N* P --> PI+ PI0

du/dd*

Loss of uu*

N* P --> K+ KS

du.uu*/d*d.u*u

uu*

N* P --> OMEGA PI+

du.d*u*.dd*/du

dd*

$N^* P \rightarrow K^+ K^- \text{PI}^+$
 $N^* P \rightarrow \text{PHI} \text{PI}^+$
 $N^* P \rightarrow \text{RHO}^+ \text{PI}^+ \text{PI}^-$
 $N^* P \rightarrow \text{RHO}^- \text{PI}^+ \text{PI}^+$
 $N^* P \rightarrow \text{RHO}0 \text{PI}^+ \text{PI}0$
 $N^* P \rightarrow \text{RHO}0 \text{RHO}^+$

$du.uu^*/d^*u^*.uu^*/du$
 $du.d^*u^*.du.d^*u^*/du$
 $du.d^*u^*.du/du/d^*u^*$
 $d^*u^*.du.d^*u^*/du/du$
 $du.d^*u^*.uu^*/du/d^*d$
 $du.d^*u^*.uu^*/du.d^*u^*.du$

uu^*uu^*
 dd^*uu^*
 dd^*uu^*
 dd^*uu^*
 dd^*uu^*
 $dd^*uu^*uu^*$

$N^* N \rightarrow P P^*$
 $N^* N \rightarrow \text{PI}^+ \text{PI}^- \text{PI}0$
 $N^* N \rightarrow 2\text{PI}^+ 2\text{PI}^-$
 $N^* N \rightarrow N P^* \text{PI}^+$
 $N^* N \rightarrow P N^* \text{PI}^-$

$duu/d^*u^*u^*$
 $du/d^*u^*/dd^*$
 $du/d^*u^*du/d^*u^*$
 $dud^*/d^*u^*u^*/du$
 $duu/d^*u^*d/d^*u^*$

$Loss\ of\ ee^*$
 $-$
 uu^*
 uu^*
 uu^*

BEAM Kaon

$K^+ P \rightarrow \text{DELTA}^{++} K0$
 $K^+ P \rightarrow \text{DELTA}^+ K^+$
 $K^+ P \rightarrow K0 P \text{PI}^+ \text{PI}0$
 $K^+ P \rightarrow \text{OMEGA} K0 P \text{PI}^+$

$duu.du/d^*u^*.du$
 $dud^*.du/du.uu^*$
 $du.d^*u^*/duu/du/u.u^*$
 $du.d^*u^*.dd^*/du.d^*u^*/duu/du$

dd^*
 dd^*
 dd^*uu^*
 $dd^*dd^*dd^*uu^*$

$K^+ N \rightarrow K0 P$
 $K^+ N \rightarrow \text{DELTA}0 K^+$
 $K^+ N \rightarrow K0 N \text{PI}^+$
 $K^+ N \rightarrow K^+ P \text{PI}^-$
 $K^+ N \rightarrow \text{DELTA}^+ K0$
 $K^+ N \rightarrow \text{DELTA}^{++} K0 \text{PI}^-$
 $K^+ N \rightarrow \text{DELTA}^- K^+ \text{PI}^+$

$du.d^*u^*/duu$
 $dud^*.uu^*/du.uu^*$
 $du.d^*u^*/dud^*/du$
 $du.uu^*/duu./d^*u^*$
 $dud^*.du/du.d^*u^*$
 $duu.du/du.d^*u^*/d^*u^*$
 $dud^*.d^*u^*/du.uu^*/du$

$-$
 uu^*
 dd^*
 dd^*
 dd^*
 dd^*uu^*
 dd^*uu^*

$K^+ \text{DEUT} \rightarrow K0 P P$
 $K^+ \text{DEUT} \rightarrow K0 \text{PI}^+ \text{DEUT}$

$duu/duu/du.d^*u$
 $du.d^*u^*/du/duu.dud^*$

$-$
 dd^*

$K^- P \rightarrow \text{LAMBDA} \text{PI}0$
 $K^- P \rightarrow \text{DELTA}^+ K^-$
 $K^- P \rightarrow \text{DELTA}0 K^*0$
 $K^- P \rightarrow \text{LAMBDA} \text{PI}^+ \text{PI}^-$
 $K^- P \rightarrow K^- N \text{PI}^+$
 $K^- P \rightarrow K^*0 P \text{PI}^-$
 $K^- P \rightarrow \text{XI}^- K^+$
 $K^- P \rightarrow \text{XI}0 K0$
 $K^- P \rightarrow \text{LAMBDA} \text{RHO}0$

$dud^*.uu^*/u.u^*$
 $dud^*.du/d^*u^*.uu^*$
 $dud^*.uu^*/du.d^*u^*$
 $dud^*.uu^*/du/d^*u^*$
 $d^*u^*.uu^*/dud^*/du$
 $d^*u^*.du/duu/d^*u^*$
 $dud^*.uu^*.d^*u^*/du.uu^*$
 $dud^*.uu^*.uu^*/du.d^*u^*$
 $dud^*.uu^*/du.d^*u^*.uu^*$

$-$
 dd^*
 dd^*
 dd^*
 dd^*
 dd^*
 dd^*uu^*
 dd^*uu^*
 dd^*uu^*

K- P --> SIGMA0 RH00
 K- P --> SIGMA+ RHO-
 K- P --> SIGMA- RHO+
 K- P --> LAMBDA 0MEGA
 K- P --> XI0 K+ PI-
 K- P --> LAMBDA K+ K-
 K- P --> LAMBDA K+ PI0 PI-
 K- P --> LAMBDA K0 PI+ PI-
 K- P --> SIGMA0 K+ K-
 K- P --> SIGMA- K+ PI+ PI-
 K- P --> SIGMA- K0 PI+ PI0
 K- P --> SIGMA+ K+ 2PI-
 K- P --> SIGMA+ K0 PI0 PI-
 K- P --> XI- K0 PI+
 K- P --> LAMBDA PHI
 K- P --> SIGMA+ K- K0
 K- P --> LAMBDA K0 K*0
 K- P --> SIGMA- K*0 K+
 K- P --> SIGMA0 K0 K*0
 K- P --> SIGMA0 K0 PI+ PI-
 K- P --> LAMBDA K0 K- PI+
 K- P --> LAMBDA K*0 K+ PI-
 K- P --> OMEGA K*0 P PI-
 K- P --> SIGMA0 K*0 K+ PI-
 K- P --> OMEGA- K+ K0

$dud^*.dd^*/du.d^*u^*.uu^*$
 $dud^*.du/d^*u^*.du.d^*u^*$
 $dud^*.d^*u^*/du.du.d^*u^*$
 $dud^*.uu^*/du.d^*u^*.dd^*$
 $dud^*.uu^*.uu^*/du.uu^*/d^*u^*$
 $dud^*.uu^*/du.uu^*/d^*u^*.uu^*$
 $dud^*.uu^*/du.uu^*/uu^*/d^*u^*$
 $dud^*.uu^*/du.d^*u^*/du/d^*u^*$
 $dud^*.dd^*/du.uu^*/d^*u^*.uu^*$
 $dud^*.d^*u^*/du.uu^*/du/d^*u^*$
 $dud^*.d^*u^*/du.d^*u^*/du/uu^*$
 $dud^*.du/du.uu^*/d^*u^*/d^*u^*$
 $dud^*.du/du.d^*u^*/d^*u^*/uu^*$
 $dud^*.uu^*.d^*u^*/du.d^*u^*/du.$
 $dud^*.uu^*/du.d^*u^*.du.d^*u^*.$
 $dud^*.du/d^*u^*.uu^*/du.d^*u^*$
 $dud^*.uu^*/du.d^*u^*.du.d^*u^*.$
 $dud^*.d^*u^*/du.d^*u^*/du.uu^*$
 $dud^*.dd^*/du.d^*u^*/du.d^*u^*$
 $dud^*.dd^*/du.d^*u^*/du/d^*u^*$
 $dud^*.uu^*/du.d^*u^*/d^*u^*.uu^*/du$
 $dud^*.uu^*/du.d^*u^*.du.uu^*/d^*u^*.$
 $du.d^*u^*.dd^*/du.d^*u^*/duu/d^*u^*$
 $dud^*.dd^*/du.d^*u^*/du.uu^*/d^*u^*$
 $dud^*.d^*u^*.du.d^*u^*/du.uu^*/d^*u^*.du$

dd^*dd^*
 dd^*dd^*
 dd^*dd^*
 dd^*dd^*
 $dd^*uu^*uu^*$
 $dd^*uu^*uu^*$
 $dd^*uu^*uu^*$
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 $dd^*dd^*uu^*$
 $dd^*dd^*uu^*$
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 $dd^*dd^*dd^*uu^*$
 $dd^*dd^*dd^*uu^*uu^*$

K- N --> K- P PI-
 K- N --> SIGMA+ 2PI-
 K- N --> SIGMA- PI+ PI-
 K- N --> K*0 N PI-
 K- N --> K*0 P 2PI-
 K- N --> XI- K0
 K- N --> LAMBDA PI+ 2PI-
 K- N --> LAMBDA K- K0
 K- N --> XI- K+ PI-
 K- N --> XI0 K0 PI-
 K- N --> SIGMA0 K- K0
 K- N --> SIGMA+ K- K0 PI-
 K- N --> SIGMA- K- K0 PI+

$d^*u^*.uu^*/duu/d^*u^*$
 $dud^*.du/d^*u^*/d^*u^*$
 $dud^*.d^*u^*/du/d^*u^*$
 $du.d^*u^*/dud^*/d^*u^*$
 $du.d^*u^*/duu/d^*u^*/d^*u^*$
 $dud^*.uu^*.d^*u^*/du.d^*u^*$
 $dud^*.uu^*/du/d^*u^*/d^*u^*$
 $dud^*.uu^*/d^*u^*.uu^*/du.d^*u^*$
 $dud^*.uu^*.d^*u^*/du.uu^*/d^*u^*$
 $dud^*.uu^*.uu^*/du.d^*u^*/d^*u^*$
 $dud^*.dd^*/d^*u^*.uu^*/du.d^*u^*$
 $dud^*.du/d^*u^*.uu^*/du.d^*u^*/d^*u^*$
 $dud^*.d^*u^*/d^*u^*.uu^*/du.d^*u^*/du$

uu^*
 dd^*
 dd^*
 dd^*
 dd^*uu^*
 dd^*uu^*
 dd^*uu^*
 $dd^*uu^*uu^*$
 $dd^*uu^*uu^*$
 $dd^*uu^*uu^*$
 $dd^*dd^*uu^*$
 $dd^*dd^*uu^*uu^*$
 $dd^*dd^*uu^*uu^*$

K- DEUT --> SIGMA- P	dud*.d*u*/duu	Loss of uu*
K- DEUT --> LAMBDA N	dud*.uu*/dud*	Loss of uu*
K- DEUT --> K- 2P PI-	d*u*.uu*/duu/duu/d*u*	uu*
K- DEUT --> K*0 PI- DEUT	d*u*du/d*u*/duu.dud*	dd*
K- DEUT --> LAMBDA P* DEUT	dud*.uu*/d*u*u*/duu.dud*	dd*uu*

The following are those Kaon beam reactions may require K'- (d*u*.dd*) rather than K- (d*u*.uu*)

K'- P --> SIGMA0 PI0	dud*.dd*/uu*	-
K'- P --> K*0 N	d*u*.du/dud*	-
K'- P --> LAMBDA PI0	dud*.uu*/dd*	-
K'- P --> SIGMA+ PI-	dud*.du/d*u*	-
K'- P --> SIGMA- PI+	dud*.d*u*/du	-
K'- P --> SIGMA0 PI+ PI-	dud*.dd*/du/d*u*	dd*
K'- DEUT --> SIGMA- PI+ N	dud*.d*u*/du/dud*	-

The following are some hypothetical reactions predicted by the new quark theory which are not so easily explained by the current standard quark model.

E- P --> LAMBDA PI+ E-	dud*.uu*/du/E-	dd*uu*
E- P --> SIGMA0 PI+ E-	dud*.dd*/du/E-	dd*dd*
E- P --> XI0 PI+ E-	dud*.uu*.uu*/du/E-	dd*uu*uu*
E- P --> XI0 K+ E-	dud*.uu*.uu*/du.uu*/E-	dd*uu*uu*uu*
E- P --> LAMBDA RHO+ E-	dud*.uu*/du.d*u*.du/E-	dd*dd*uu*uu*
E- P --> SIGMA0 RHO+ E-	dud*.dd*/du.d*u*.du/E-	dd*dd*dd*uu*
E- N --> SIGMA- PI+ E-	dud*.d*u*/du/E-	dd*uu*
E- N --> XI- PI+ E-	dud*.d*u*.uu*/du/E-	dd*uu*uu*
E- N --> XI0 PI'0 E-	dud*.uu*.uu*/dd*/E-	dd*uu*uu*
E- N --> XI- K+ E-	dud*.d*u*.uu*/du.uu*/E-	dd*uu*uu*uu*
E- N --> XI0 K0 E-	dud*.uu*.uu*/du.d*u*/E-	dd*uu*uu*uu*
E- N --> SIGMA- RHO+ E-	dud*.d*u*/du.d*u*.du/E-	dd*dd*uu*uu*
PI+ P --> SIGMA+ PI+	dud*.du/du	dd*
PI+ P --> LAMBDA PI+ PI+	dud*.uu*/du/du	dd*uu*
PI+ P --> SIGMA0 PI+ PI+	dud*.dd*/du/du	dd*dd*
PI+ P --> SIGMA+ RHO+	dud*.du/du.d*u*.du	dd*dd*uu*
PI+ P --> XI0 PI+ PI+	dud*.uu*.uu*/du/du	dd*uu*uu*

PI+ P --> XI0 K+ PI+

dud*.uu*.uu*/du.uu*/du

dd*uu*uu*uu*

PI+ N --> LAMBDA PI+

dud*.uu*/du

uu*

PI+ N --> SIGMA+ PI0

dud*.du/uu*

uu*

PI+ N --> DELTA++ K-

duu.du/d*u*.uu*

uu*uu*

PI+ N --> XI0 PI+

dud*.uu*.uu*/du

uu*uu*

PI+ N --> XI0 K+

dud*.uu*.uu*/du.uu*

uu*uu*uu*

PI- P --> SIGMA+ PI-

dud*.du/d*u*

dd*

PI- P --> SIGMA- PI+

dud*.d*u*/du

dd*

PI- P --> SIGMA+ K-

dud*.du/d*u*.uu*

dd*uu*

PI- P --> DELTA+ K-

dud*.du/d*u*.uu*

dd*uu*

PI- P --> SIGMA+ K-

dud*.du/d*u*.uu*

dd*uu*

PI- P --> XI0 PI'0

dud*.uu*.uu*/dd*

dd*uu*

PI- P --> XI- PI+

dud*.uu*.d*u*/du

dd*uu*

PI- P --> XI- K+

dud*.uu*.d*u*/du.uu*

dd*uu*uu*

PI- P --> XI0 K0

dud*.uu*.uu*/dd*.uu*

dd*uu*uu*

PI- N --> LAMBDA PI-

dud*.uu*/d*u*

uu*

PI- N --> SIGMA0 PI-

dud*.du/d*u*

dd*

PI- N --> SIGMA- PI0

dud*.d*u*/du

dd*

PI- N --> XI- PI0

dud*.uu*.d*u*/uu*

uu*uu*

PI- N --> XI0 PI-

dud*.uu*.uu*/d*u*

uu*uu*

PI- N --> OMEGA'-

dud*.dd*.uu*.d*u*

dd*uu*

PI- N --> XI0 K-

dud*.uu*.uu*/d*u*.uu*

uu*uu*uu*

PI- N --> XI- K0

dud*.uu*.d*u*/dd*.uu*

dd*uu*uu*