

Cross-Sections and Branching Ratios for mSUGRA Benchmark
Point D', ISAJET v. 7.69

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Part I

Parameters

These are the parameters for mSUGRA benchmark point D', from 'Physics Benchmarks for the ILC Detectors', <http://arxiv.org/abs/hep-ex/0603010>.

M_0	110.000
$M_{1/2}$	525.000
A_0	0.000
$\tan(\beta)$	10.000
μ	657.97
M_t	175.000
$m_{\tilde{g}}$	1205.60
m_{A^0}	749.93
$m_{\tilde{q}_1}$	1050.69
$m_{\tilde{d}_R}$	1006.82
$m_{\tilde{u}_R}$	1011.75
$m_{\tilde{\ell}_1}$	367.59
$m_{\tilde{e}_R}$	222.69
$m_{\tilde{q}_3}$	975.10
$m_{\tilde{b}_R}$	1008.71
$m_{\tilde{t}_R}$	835.87
$m_{\tilde{\ell}_3}$	363.57
$m_{\tilde{\tau}_R}$	218.49
A_t	-903.38
A_b	-1354.49
A_τ	-313.40

Part II

Masses

$\tilde{\chi}_1^0$	215.77
$\tilde{\chi}_2^0$	407.42
$\tilde{\chi}_3^0$	662.58
$\tilde{\chi}_4^0$	676.81
$\tilde{\chi}_1^+$	408.17
$\tilde{\chi}_2^+$	676.29
h^0	115.63
H^0	755.04
A^0	749.93
H^+	759.04
$\tilde{\nu}_e$	362.34
\tilde{e}_R	226.00
\tilde{e}_L	374.20
$\tilde{\tau}_1$	222.72
$\tilde{\tau}_2$	372.56
\tilde{t}_1	837.70
\tilde{t}_2	1062.16
\tilde{b}_1	1020.39
\tilde{b}_2	1058.11
\tilde{u}_R	1065.38
\tilde{u}_L	1105.14
\tilde{g}	1205.60

Part III

Cross Sections and Branching Ratios

1 Cross Sections (fb)

	Polarization 80%L 60%L			Polarization 80%R 60%L			Polarization 80%L 60%R			Polarization 80%R 60%R		
	500 GeV	750 GeV	1000 GeV	500 GeV	750 GeV	1000 GeV	500 GeV	750 GeV	1000 GeV	500 GeV	750 GeV	1000 GeV
$\tilde{\chi}_1^0 \tilde{\chi}_2^0$		6.47	11.7		1.03	1.75		25.7	46.5		2.93	5.27
$\tilde{\chi}_1^0 \tilde{\chi}_3^0$			0.262			1.96			0.234			0.509
$\tilde{\chi}_1^0 \tilde{\chi}_4^0$			0.242			0.939			0.582			0.292
$\tilde{\chi}_2^0 \tilde{\chi}_2^0$			9.45			1.05			37.8			4.2
$\tilde{\chi}_2^0 \tilde{\chi}_3^0$												
$\tilde{\chi}_2^0 \tilde{\chi}_4^0$												
$\tilde{\chi}_3^0 \tilde{\chi}_3^0$												
$\tilde{\chi}_3^0 \tilde{\chi}_4^0$												
$\tilde{\chi}_4^0 \tilde{\chi}_4^0$												
$\tilde{\chi}_1^+ \tilde{\chi}_1^-$			21			2.43			84			9.36
$\tilde{\chi}_1^+ \tilde{\chi}_2^-$												
$\tilde{\chi}_2^+ \tilde{\chi}_1^-$												
$\tilde{\chi}_2^+ \tilde{\chi}_2^-$												
$\tilde{e}_R^+ \tilde{e}_R^-$	4.35	24.6	28.6	29	193.	234.	5.41	18.8	17.1	7.72	49.5	59.5
$\tilde{e}_R^+ \tilde{e}_L^-$		2.64	2.02		23.8	18.2		10.6	8.1		95.1	72.9
$\tilde{e}_L^+ \tilde{e}_R^-$		95.1	72.9		10.6	8.1		23.8	18.2		2.64	2.02
$\tilde{e}_L^+ \tilde{e}_L^-$		0.011	12.3		0.008	5.7		0.039	47.2		0.006	6.31
$\tilde{\mu}_R^+ \tilde{\mu}_R^-$	3.3	9.55	7.5	19.5	55.8	43.7	5.13	15.1	11.9	5.35	15.4	12
$\tilde{\mu}_L^+ \tilde{\mu}_L^-$		0.01	5.68		0.008	4.98		0.035	20.9		0.006	3.41
$\tilde{\tau}_1^+ \tilde{\tau}_1^-$	3.95	9.79	7.65	22.9	56.1	43.7	6.34	15.9	12.5	6.31	15.5	12.1
$\tilde{\tau}_1^+ \tilde{\tau}_2^-$		0.043	0.057		0.101	0.133		0.133	0.174		0.039	0.051
$\tilde{\tau}_2^+ \tilde{\tau}_1^-$		0.043	0.057		0.1	0.133		0.132	0.174		0.039	0.051
$\tilde{\tau}_2^+ \tilde{\tau}_2^-$		0.05	5.7		0.045	5.21		0.182	20.9		0.03	3.46
$\tilde{\nu}_e \tilde{\nu}_e$		5.81	84.7		1.12	14.4		23.1	337.		2.68	38.6
$\tilde{\nu}_\mu \tilde{\nu}_\mu$		0.212	2.25		0.495	5.26		0.65	6.9		0.19	2.02
$\tilde{\nu}_\tau \tilde{\nu}_\tau$		0.322	2.32		0.751	5.41		0.986	7.11		0.288	2.08
$h^0 Z^0$	32.4	13.1	7.08	75.4	30.6	16.5	99.1	40.1	21.7	29	11.7	6.34

2 Branching Ratios

 \boxed{t}
 $M(t) = \text{GeV}$

t branching ratios	
mode	fraction
$c\bar{s}b$	33.3%
$u\bar{d}b$	33.3
$\mu^+\nu_\mu b$	11.1
$e^+\nu_e b$	11.1
$\tau^+\nu_\tau b$	11.1

 $\boxed{\tilde{g}}$
 $M(\tilde{g}) = 1205.60 \text{ GeV}$

\tilde{g} branching ratios	
mode	fraction
$\tilde{t}_1\bar{t}$	12.8%
\tilde{t}_1t	12.8
\tilde{b}_1b	6.71
$\tilde{b}_1\bar{b}$	6.71
\tilde{b}_2b	4.69
$\tilde{b}_2\bar{b}$	4.69
$\tilde{d}_R d$	4.36
$\tilde{s}_R s$	4.36
$\tilde{s}_R \bar{s}$	4.36
$\tilde{d}_R \bar{d}$	4.36
$\tilde{c}_R \bar{c}$	4.12
$\tilde{c}_R c$	4.12
$\tilde{u}_R u$	4.12
$\tilde{u}_R \bar{u}$	4.12
$\tilde{u}_L u$	2.19
$\tilde{c}_L c$	2.19
$\tilde{u}_L \bar{u}$	2.19
$\tilde{c}_L \bar{c}$	2.19
$\tilde{s}_L s$	2.06
$\tilde{s}_L \bar{s}$	2.06
$\tilde{d}_L d$	2.06
$\tilde{d}_L \bar{d}$	2.06
$\tilde{\chi}_4^0 t\bar{t}$	0.183
$\tilde{\chi}_1^+ t\bar{t}$	0.137
$\tilde{\chi}_1^+ t b\bar{t}$	0.137
$\tilde{\chi}_2^0 t\bar{t}$	0.119
$\tilde{\chi}_3^0 t\bar{t}$	0.06
$\tilde{\chi}_2^+ t b\bar{t}$	0.035
$\tilde{\chi}_2^- t b\bar{t}$	0.035
$\tilde{\chi}_1^0 t\bar{t}$	0.019
$\tilde{\chi}_3^0 g$	0.004
$\tilde{\chi}_4^0 g$	0.003

 $\boxed{\tilde{u}_L}$
 $M(\tilde{u}_L) = 1105.14 \text{ GeV}$

\tilde{u}_L branching ratios	
mode	fraction
$\tilde{\chi}_1^+ d$	64.7%
$\tilde{\chi}_2^0 u$	32.1
$\tilde{\chi}_2^+ d$	1.2
$\tilde{\chi}_1^0 u$	1.17
$\tilde{\chi}_4^0 u$	0.806
$\tilde{\chi}_3^0 u$	0.029

 $\boxed{\tilde{d}_L}$
 $M(\tilde{d}_L) = 1108.23 \text{ GeV}$

\tilde{d}_L branching ratios	
mode	fraction
$\tilde{\chi}_1^- u$	62.9%
$\tilde{\chi}_2^0 d$	31.8
$\tilde{\chi}_2^- u$	2.64
$\tilde{\chi}_1^0 d$	1.64
$\tilde{\chi}_4^0 d$	1.03
$\tilde{\chi}_3^0 d$	0.048

 $\boxed{\tilde{s}_L}$
 $M(\tilde{s}_L) = 1108.23 \text{ GeV}$

\tilde{s}_L branching ratios	
mode	fraction
$\tilde{\chi}_1^- c$	62.9%
$\tilde{\chi}_2^0 s$	31.8
$\tilde{\chi}_2^- c$	2.64
$\tilde{\chi}_1^0 s$	1.64
$\tilde{\chi}_4^0 s$	1.03
$\tilde{\chi}_3^0 s$	0.048

\widetilde{c}_L

$M(\widetilde{c}_L) = 1105.14 \text{ GeV}$

\widetilde{c}_L branching ratios	
mode	fraction
$\widetilde{\chi}_1^+ s$	64.7%
$\widetilde{\chi}_2^0 c$	32.1
$\widetilde{\chi}_2^+ s$	1.2
$\widetilde{\chi}_1^0 c$	1.17
$\widetilde{\chi}_4^0 c$	0.806
$\widetilde{\chi}_3^0 c$	0.029

 \widetilde{b}_1

$M(\widetilde{b}_1) = 1020.39 \text{ GeV}$

\widetilde{b}_1 branching ratios	
mode	fraction
$\widetilde{\chi}_1^- t$	34.4%
$\widetilde{\chi}_2^- t$	23.9
$\widetilde{\chi}_2^0 b$	19.4
$W^- \widetilde{t}_1$	16.5
$\widetilde{\chi}_1^0 b$	5.23
$\widetilde{\chi}_3^0 b$	0.443
$\widetilde{\chi}_4^0 b$	0.204

 \widetilde{t}_1

$M(\widetilde{t}_1) = 837.70 \text{ GeV}$

\widetilde{t}_1 branching ratios	
mode	fraction
$\widetilde{\chi}_1^+ b$	33.3%
$\widetilde{\chi}_1^0 t$	29.1
$\widetilde{\chi}_2^+ b$	23.2
$\widetilde{\chi}_2^0 t$	13.3
$\widetilde{\chi}_3^0 t$	1.1

 \widetilde{u}_R

$M(\widetilde{u}_R) = 1065.38 \text{ GeV}$

\widetilde{u}_R branching ratios	
mode	fraction
$\widetilde{\chi}_1^0 u$	99.7%
$\widetilde{\chi}_4^0 u$	0.194
$\widetilde{\chi}_2^0 u$	0.088
$\widetilde{\chi}_3^0 u$	0.04

 \widetilde{d}_R

$M(\widetilde{d}_R) = 1061.21 \text{ GeV}$

\widetilde{d}_R branching ratios	
mode	fraction
$\widetilde{\chi}_1^0 d$	99.7%
$\widetilde{\chi}_4^0 d$	0.192
$\widetilde{\chi}_2^0 d$	0.088
$\widetilde{\chi}_3^0 d$	0.04

 \widetilde{s}_R

$M(\widetilde{s}_R) = 1061.21 \text{ GeV}$

\widetilde{s}_R branching ratios	
mode	fraction
$\widetilde{\chi}_1^0 s$	99.7%
$\widetilde{\chi}_4^0 s$	0.192
$\widetilde{\chi}_2^0 s$	0.088
$\widetilde{\chi}_3^0 s$	0.04

 \widetilde{c}_R

$M(\widetilde{c}_R) = 1065.38 \text{ GeV}$

\widetilde{c}_R branching ratios	
mode	fraction
$\widetilde{\chi}_1^0 c$	99.7%
$\widetilde{\chi}_4^0 c$	0.194
$\widetilde{\chi}_2^0 c$	0.088
$\widetilde{\chi}_3^0 c$	0.04

 \widetilde{b}_2

$M(\widetilde{b}_2) = 1058.11 \text{ GeV}$

\widetilde{b}_2 branching ratios	
mode	fraction
$\widetilde{\chi}_2^- t$	30.5%
$W^- \widetilde{t}_1$	25.3
$\widetilde{\chi}_1^- t$	25.1
$\widetilde{\chi}_2^0 b$	13.9
$\widetilde{\chi}_1^0 b$	2.79
$\widetilde{\chi}_4^0 b$	1.61
$\widetilde{\chi}_3^0 b$	0.706

 \widetilde{t}_2

$M(\widetilde{t}_2) = 1062.16 \text{ GeV}$

\widetilde{t}_2 branching ratios	
mode	fraction
$\widetilde{\chi}_1^+ b$	25.2%
$\widetilde{\chi}_4^0 t$	20.6
$Z^0 \widetilde{t}_1$	12.6
$\widetilde{\chi}_2^0 t$	11.5
$\widetilde{\chi}_3^0 t$	10.8
$\widetilde{\chi}_2^+ b$	9.22
$h^0 \widetilde{t}_1$	8.24
$\widetilde{\chi}_1^0 t$	1.84

 \widetilde{e}_L

$M(\widetilde{e}_L) = 374.20 \text{ GeV}$

\widetilde{e}_L branching ratios	
mode	fraction
$\widetilde{\chi}_1^0 e^-$	100.%
$\widetilde{\tau}_1^+ e^- \tau^-$	0.001

$$\boxed{\tilde{\mu}_L^-}$$

$$M(\tilde{\mu}_L^-) = 374.20 \text{ GeV}$$

$$\tilde{\mu}_L^- \text{ branching ratios}$$

mode	fraction
$\tilde{\chi}_1^0 \mu^-$	100.0%
$\tilde{\tau}_1^+ \mu^- \tau^-$	0.001

$$\boxed{\tilde{\tau}_1^-}$$

$$M(\tilde{\tau}_1^-) = 222.72 \text{ GeV}$$

$$\tilde{\tau}_1^- \text{ branching ratios}$$

mode	fraction
$\tilde{\chi}_1^0 \tau^-$	100.0%

$$\boxed{\tilde{\nu}_e}$$

$$M(\tilde{\nu}_e) = 362.34 \text{ GeV}$$

$$\tilde{\nu}_e \text{ branching ratios}$$

mode	fraction
$\tilde{\chi}_1^0 \nu_e$	100.0%
$\tilde{\tau}_1^+ e^- \nu_\tau$	0.001

$$\boxed{\tilde{\nu}_\mu}$$

$$M(\tilde{\nu}_\mu) = 362.34 \text{ GeV}$$

$$\tilde{\nu}_\mu \text{ branching ratios}$$

mode	fraction
$\tilde{\chi}_1^0 \nu_\mu$	100.0%
$\tilde{\tau}_1^+ \mu^- \nu_\tau$	0.001

$$\boxed{\tilde{\nu}_\tau}$$

$$M(\tilde{\nu}_\tau) = 358.18 \text{ GeV}$$

$$\tilde{\nu}_\tau \text{ branching ratios}$$

mode	fraction
$\tilde{\chi}_1^0 \nu_\tau$	76.8%
$W^+ \tilde{\tau}_1^-$	23.2

$$\boxed{\tilde{e}_R^-}$$

$$M(\tilde{e}_R^-) = 226.00 \text{ GeV}$$

$$\tilde{e}_R^- \text{ branching ratios}$$

mode	fraction
$\tilde{\chi}_1^0 e^-$	100.0%

$$\boxed{\tilde{\mu}_R^-}$$

$$M(\tilde{\mu}_R^-) = 226.00 \text{ GeV}$$

$$\tilde{\mu}_R^- \text{ branching ratios}$$

mode	fraction
$\tilde{\chi}_1^0 \mu^-$	100.0%

$$\boxed{\tilde{\tau}_2^-}$$

$$M(\tilde{\tau}_2^-) = 372.56 \text{ GeV}$$

$$\tilde{\tau}_2^- \text{ branching ratios}$$

mode	fraction
$\tilde{\chi}_1^0 \tau^-$	70.8%
$h^0 \tilde{\tau}_1^-$	16.8
$Z^0 \tilde{\tau}_1^-$	12.4

$$\boxed{\tilde{\chi}_2^0}$$

$$M(\tilde{\chi}_2^0) = 407.42 \text{ GeV}$$

$$\tilde{\chi}_2^0 \text{ branching ratios}$$

mode	fraction
$\tilde{\nu}_\tau \nu_\tau$	10.4%
$\tilde{\nu}_\tau \tilde{\nu}_\tau$	10.4
$\tilde{\nu}_e \nu_e$	8.8
$\tilde{\nu}_\mu \tilde{\nu}_\mu$	8.8
$\tilde{\nu}_e \tilde{\nu}_e$	8.8
$\tilde{\nu}_\mu \nu_\mu$	8.8
$\tilde{\tau}_2^+ \tau^-$	5.7
$\tilde{\tau}_2^- \tau^+$	5.7
$\tilde{e}_L^+ e^-$	5.31
$\tilde{e}_L^- e^+$	5.31
$\tilde{\mu}_L^+ \mu^-$	5.31
$\tilde{\mu}_L^- \mu^+$	5.31
$\tilde{\chi}_1^0 h^0$	4.08
$\tilde{\tau}_1^+ \tau^-$	3.22
$\tilde{\tau}_1^- \tau^+$	3.22
$\tilde{\chi}_1^0 Z^0$	0.296
$\tilde{e}_R^- e^+$	0.141
$\tilde{\mu}_R^+ \mu^-$	0.141
$\tilde{\mu}_R^- \mu^+$	0.141
$\tilde{e}_R^+ e^-$	0.141

$$\boxed{\tilde{\chi}_3^0}$$

$$M(\tilde{\chi}_3^0) = 662.58 \text{ GeV}$$

$$\boxed{\tilde{\chi}_4^0}$$

$$M(\tilde{\chi}_4^0) = 676.81 \text{ GeV}$$

$$\boxed{\tilde{\chi}_1^+}$$

$$M(\tilde{\chi}_1^+) = 408.17 \text{ GeV}$$

$$\tilde{\chi}_3^0 \text{ branching ratios}$$

mode	fraction
$\tilde{\chi}_1^- W^+$	29.0%
$\tilde{\chi}_1^+ W^-$	29.0
$\tilde{\chi}_2^0 Z^0$	26.1
$\tilde{\chi}_1^0 Z^0$	10.3
$\tilde{\chi}_1^0 h^0$	1.76
$\tilde{\chi}_2^0 h^0$	0.921
$\tilde{\tau}_1^+ \tau^-$	0.671
$\tilde{\tau}_1^- \tau^+$	0.671
$\tilde{\tau}_2^+ \tau^+$	0.481
$\tilde{\tau}_2^+ \tau^-$	0.481
$\tilde{\nu}_\tau \bar{\nu}_\tau$	0.074
$\tilde{\nu}_\tau \nu_\tau$	0.074
$\tilde{\nu}_e \nu_e$	0.072
$\tilde{\nu}_\mu \bar{\nu}_\mu$	0.072
$\tilde{\nu}_\mu \nu_\mu$	0.072
$\tilde{\nu}_e \bar{\nu}_e$	0.072
$\tilde{e}_R^+ e^-$	0.035
$\tilde{\mu}_R^- \mu^+$	0.035
$\tilde{e}_R^- e^+$	0.035
$\tilde{\mu}_R^+ \mu^-$	0.035
$\tilde{\mu}_L^+ \mu^-$	0.014
$\tilde{e}_L^- e^+$	0.014
$\tilde{\mu}_L^- \mu^+$	0.014
$\tilde{e}_L^+ e^-$	0.014

$$\tilde{\chi}_4^0 \text{ branching ratios}$$

mode	fraction
$\tilde{\chi}_1^+ W^-$	26.8%
$\tilde{\chi}_1^- W^+$	26.8
$\tilde{\chi}_2^0 h^0$	22.3
$\tilde{\chi}_1^0 h^0$	8.36
$\tilde{\chi}_1^0 Z^0$	1.63
$\tilde{\nu}_\tau \nu_\tau$	1.2
$\tilde{\nu}_\tau \bar{\nu}_\tau$	1.2
$\tilde{\nu}_\mu \bar{\nu}_\mu$	1.18
$\tilde{\nu}_\mu \nu_\mu$	1.18
$\tilde{\nu}_e \nu_e$	1.18
$\tilde{\nu}_e \bar{\nu}_e$	1.18
$\tilde{\chi}_2^0 Z^0$	1.11
$\tilde{\tau}_2^- \tau^+$	1.06
$\tilde{\tau}_2^+ \tau^-$	1.06
$\tilde{\mu}_L^+ \mu^-$	0.558
$\tilde{e}_L^- e^+$	0.558
$\tilde{e}_L^+ e^-$	0.558
$\tilde{\mu}_L^- \mu^+$	0.558
$\tilde{\tau}_1^+ \tau^-$	0.478
$\tilde{\tau}_1^- \tau^+$	0.478
$\tilde{\mu}_R^- \mu^+$	0.155
$\tilde{\mu}_R^+ \mu^-$	0.155
$\tilde{e}_R^- e^+$	0.155
$\tilde{e}_R^+ e^-$	0.155

$$\tilde{\chi}_1^+ \text{ branching ratios}$$

mode	fraction
$\tilde{\nu}_\tau \tau^+$	22.0%
$\tilde{\nu}_\mu \mu^+$	18.6
$\tilde{\nu}_e e^+$	18.6
$\tilde{\tau}_2^+ \nu_\tau$	10.8
$\tilde{\mu}_L^+ \nu_\mu$	10.1
$\tilde{e}_L^+ \nu_e$	10.1
$\tilde{\tau}_1^+ \nu_\tau$	5.86
$\tilde{\chi}_1^0 W^+$	3.88

$$\boxed{\tilde{\chi}_2^+}$$

$$M(\tilde{\chi}_2^+) = 676.29 \text{ GeV}$$

$$\tilde{\chi}_2^+ \text{ branching ratios}$$

mode	fraction
$\tilde{\chi}_2^0 W^+$	28.2%
$\tilde{\chi}_1^+ Z^0$	26.3
$\tilde{\chi}_1^+ h^0$	24.3
$\tilde{\chi}_1^0 W^+$	8.92
$\tilde{\tau}_2^+ \nu_\tau$	2.68
$\tilde{\mu}_L^+ \nu_\mu$	2.36
$\tilde{e}_L^+ \nu_e$	2.36
$\tilde{\nu}_\tau \tau^+$	1.93
$\tilde{\nu}_\mu \mu^+$	1.15
$\tilde{\nu}_e e^+$	1.15
$\tilde{\tau}_1^+ \nu_\tau$	0.672

h^0 $M(h^0) = 115.63 \text{ GeV}$

h^0 branching ratios	
mode	fraction
$b\bar{b}$	80.5%
$\tau^-\tau^+$	5.85
gg	3.78
$c\bar{c}$	3.43
$W^-c\bar{s}$	0.922
$W^+c\bar{s}$	0.922
$W^+\bar{u}d$	0.922
$W^-\bar{u}d$	0.922
$W^+\mu^-\bar{\nu}_\mu$	0.307
$W^-\tau^+\nu_\tau$	0.307
$W^-\mu^+\nu_\mu$	0.307
$W^-e^+\nu_e$	0.307
$W^+\tau^-\bar{\nu}_\tau$	0.307
$W^+e^-\bar{\nu}_e$	0.307
$s\bar{s}$	0.246
	0.175
$Z^0s\bar{s}$	0.064
$Z^0d\bar{d}$	0.064
$Z^0b\bar{b}$	0.064
$Z^0c\bar{c}$	0.05
$Z^0u\bar{u}$	0.05
$Z^0\nu_\tau\bar{\nu}_\tau$	0.029
$Z^0\nu_\mu\bar{\nu}_\mu$	0.029
$Z^0\nu_e\bar{\nu}_e$	0.029
$\mu^-\mu^+$	0.02
$Z^0\mu^-\mu^+$	0.015
$Z^0e^-e^+$	0.015
$Z^0\tau^-\tau^+$	0.015
$d\bar{d}$	0.001

 H^0 $M(H^0) = 755.04 \text{ GeV}$

H^0 branching ratios	
mode	fraction
$b\bar{b}$	64.2%
$t\bar{t}$	22.0
$\tau^-\tau^+$	10.7
$\tilde{\chi}_1^0\tilde{\chi}_2^0$	1.09
$s\bar{s}$	0.439
$\tilde{\chi}_1^0\tilde{\chi}_1^0$	0.409
$\tilde{\tau}_1^-\tilde{\tau}_2^+$	0.321
$\tilde{\tau}_2^-\tilde{\tau}_1^+$	0.321
h^0h^0	0.145
W^+W^-	0.094
$\tilde{\tau}_1^-\tilde{\tau}_1^+$	0.082
Z^0Z^0	0.047
$\mu^-\mu^+$	0.037
$\tilde{\nu}_\tau\tilde{\nu}_\tau$	0.027
$\tilde{\nu}_\mu\tilde{\nu}_\mu$	0.024
$\tilde{\nu}_e\tilde{\nu}_e$	0.024
gg	0.02
$\tilde{\mu}_R^-\tilde{\mu}_R^+$	0.015
$\tilde{e}_R^-\tilde{e}_R^+$	0.015
$\tilde{\mu}_L^-\tilde{\mu}_L^+$	0.003
$\tilde{e}_L^-\tilde{e}_L^+$	0.003
$d\bar{d}$	0.001
$c\bar{c}$	0.001

 A^0 $M(A^0) = 749.93 \text{ GeV}$

A^0 branching ratios	
mode	fraction
$b\bar{b}$	60.4%
$t\bar{t}$	24.0
$\tau^-\tau^+$	10.1
$\tilde{\chi}_1^0\tilde{\chi}_2^0$	3.72
$\tilde{\chi}_1^0\tilde{\chi}_1^0$	0.672
$s\bar{s}$	0.413
$\tilde{\tau}_2^-\tilde{\tau}_1^+$	0.327
$\tilde{\tau}_1^-\tilde{\tau}_2^+$	0.327
h^0Z^0	0.084
$\mu^-\mu^+$	0.035
gg	0.022
$d\bar{d}$	0.001

 H^+ $M(H^+) = 759.04 \text{ GeV}$

H^+ branching ratios	
mode	fraction
$t\bar{b}$	81.5%
$\nu_\tau\tau^+$	11.6
$\tilde{\chi}_1^+\tilde{\chi}_1^0$	5.38
$\tilde{\tau}_1^+\tilde{\nu}_\tau$	0.83
$c\bar{s}$	0.439
h^0W^+	0.099
$\nu_\mu\mu^+$	0.041
$\tilde{\mu}_L^+\tilde{\nu}_\mu$	0.025
$\tilde{e}_L^+\tilde{\nu}_e$	0.025
$\tilde{\tau}_2^+\tilde{\nu}_\tau$	0.008
$u\bar{d}$	0.001