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The LHC (CMS) Discovery Potential for Models with Effective Supersymmetry and Nonuniversal Gaugino Masses

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Abstract

We investigate squark and gluino pair production at LHC (CMS) with subsequent decays into quarks, leptons and LSP in models with effective supersymmetry where the third generation of squarks is relatively light, whilst the first two generations of squarks are heavy. We consider the general case of nonuniversal gaugino masses. Visibility of signal through an excess over SM background in $(n \geq 2) jets + (m \geq 0) leptons + E_T^{miss}$ events depends rather strongly on the relation between the LSP, second neutralino, gluino and squark masses, and it decreases with increasing LSP mass. We find that for a relatively heavy gluino it is very difficult to detect a SUSY signal, even for light 3^{rd} generation squarks ($m_{\tilde{q}_3} \leq \ 1 \ TeV$), if the LSP mass is close to the 3^{rd} generation squark mass.

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1 Introduction

One of the LHC super-goals is the discovery of the supersymmetry. In particular, it is very important to investigate ways to discover strongly interacting superparticles (squarks and gluino). In ref.[1] (see, also references [2]) the LHC squark and gluino discovery potential has been investigated within the minimal SUGRA-MSSM framework [3], where all sparticle masses are determined mainly by two parameters: m_0 (common squark and slepton mass at GUT scale) and $m_{\frac{1}{2}}$ (common gaugino mass at GUT scale). The signature used in the investigation of squarks and gluino observability at LHC is $(n \geq 2) jets$ + $(m \geq 0)$ leptons + E_T^{miss} events. The conclusion of ref. [1] is that LHC is able to detect squarks and gluino with masses up to (2 - 2.5) TeV. In ref. [4] the LHC SUSY discovery potential has been investigated for the case of nonuniversal gaugino masses with universal squark masses for the first, second and third generations. The conclusion of the ref. [4] is that visibility of a signal by an excess over SM background in $(n \geq 2) jets + E_T^{miss}$ events depends rather strongly on the relation between the LSP, gluino and squark masses and it decreases with the increase of LSP mass. For relatively heavy LSP mass, close to squark or gluino masses and for $(m_{\tilde{q}}, m_{\tilde{g}}) \geq 1.5\, TeV$, the signal is too small to be observable.

In this paper we investigate squark and gluino pair production at LHC (CMS) with subsequent decays into quarks, leptons and LSP in models with effective supersymmetry [5] where the third generation of squarks is relatively light whilst the first two generations of squarks are heavy [1]. Models with effective supersymmetry solve in a natural way the problems with flavour-changing neutral currents, lepton flavor violation, electric dipole moments of electron and neutron and proton decay. In such models there are two mass scales: gauginos, higgsinos and third generation squarks are rather light - to stabilize the electroweak scale, while the first two generations of squarks and sleptons are heavy, with masses in the $\sim\ 5 - 20\ TeV$ range. We investigate the general case when the relation among gaugino masses is arbitrary. We study the detection of supersymmetry using the classical signature $(n \geq 2, 3, 4)$ jets + $(m \geq 0)$leptons + E_T^{miss}. We find that the SUSY discovery potential depends rather strongly on the relation among squarks, gluino, LSP and second neutralino masses, and it decreases with increasing LSP mass. For relatively heavy gluinos it would be very difficult or even impossible to detect a SUSY signal even for light 3^{rd} generation squarks ($m_{\tilde{q}_3} \leq 1\ TeV$) if the LSP mass is close to the 3^{rd} generation squark mass. It should be noted that in ref. [16] the ATLAS detector discovery potential of SUGRA-MSSM focalizing on effective supersymmetry for $tan\beta = 10$ and $\mu < 0$ has been studied for the signature $n \geq 2$ jets $+\ 1$ isolated lepton plus E_T^{miss}. In ref. [17] the signature "$2b\ 2W$"resulting from the gluino decay into $\tilde{g} \rightarrow 2b + 2W + \ldots$ has been used for the detection of the signal in such models.

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[1] The preliminary results of this paper have been published in [6]

2 Sparticle decays

The decays of squarks and gluinos depend on the relation among squark and gluino masses. For $m_{\tilde{q}} > m_{\tilde{g}}$ squarks decay mainly into gluino and quarks

- $\tilde{q} \to \tilde{g} q$

and the gluino decays mainly into a quark-antiquark pair and a gaugino

- $\tilde{g} \to q\bar{q}\tilde{\chi}_i^0$
- $\tilde{g} \to q\bar{q}^{'}\tilde{\chi}_1^{\pm}$

For $m_{\tilde{q}} < m_{\tilde{g}}$ the gluino decays mainly into squarks and quarks

- $\tilde{g} \to \bar{q}\tilde{q}, q\bar{\tilde{q}}$

whereas the squarks decay mainly into quarks and a gaugino

- $\tilde{q} \to q\tilde{\chi}_i^0$
- $\tilde{q} \to q^{'}\tilde{\chi}_1^{\pm}$

The lightest chargino $\tilde{\chi}_1^{\pm}$ has several leptonic decay modes giving a lepton and missing energy:

three-body decay

- $\tilde{\chi}_1^{\pm} \longrightarrow \tilde{\chi}_1^0 + l^{\pm} + \nu,$

two-body decays

- $\tilde{\chi}_1^{\pm} \longrightarrow \tilde{l}_{L,R}^{\pm} + \nu,$

  $\hookrightarrow \tilde{\chi}_1^0 + l^{\pm}$
- $\tilde{\chi}_1^{\pm} \longrightarrow \tilde{\nu}_L + l^{\pm},$

  $\hookrightarrow \tilde{\chi}_1^0 + \nu$
- $\tilde{\chi}_1^{\pm} \longrightarrow \tilde{\chi}_1^0 + W^{\pm}.$

  $\hookrightarrow l^{\pm} + \nu$

Leptonic decays of $\tilde{\chi}_2^0$ give two leptons and missing energy:

three-body decays

- $\tilde{\chi}_2^0 \longrightarrow \tilde{\chi}_1^0 + l^+ l^-$,
- $\tilde{\chi}_2^0 \longrightarrow \tilde{\chi}_1^\pm + l^\mp + \nu$,

  $\hookrightarrow \tilde{\chi}_1^0 + l^\pm + \nu$

two-body decay

- $\tilde{\chi}_2^0 \longrightarrow \tilde{l}_{L,R}^\pm + l^\mp$.

  $\hookrightarrow \tilde{\chi}_1^0 + l^\pm$

As a result of chargino and second neutralino leptonic decays, besides the classical signature

- $(n \geq 2, 3, 4)$ jets plus E_T^{miss}

signatures such as

- $(n \geq 2, 3, 4)$ jets plus $(m \geq 1)$ leptons plus E_T^{miss}

with leptons and jets in final state arise. As mentioned above, these signatures have been used in ref. [1] for the investigation of LHC(CMS) squark and gluino discovery potential within the SUGRA-MSSM model, in which gaugino masses $m_{\tilde{\chi}_1^0}$, $m_{\tilde{\chi}_2^0}$ are essentially determined by a common gaugino mass $m_{\frac{1}{2}}$, with $m_{\tilde{\chi}_2^0} \approx 0.9 m_{\frac{1}{2}}$ and $m_{\tilde{\chi}_1^0} \sim \frac{1}{2} m_{\tilde{\chi}_2^0}$.

The cross section for the production of strongly interacting superparticles

$$pp \to \tilde{g}\tilde{g}, \tilde{q}\tilde{g}, \tilde{q}\tilde{q} \tag{1}$$

depends on gluino and squark masses. Within the SUGRA-MSSM model the following approximate relations among sparticle masses take place:

$$m_{\tilde{q}}^2 \approx m_0^2 + 6 m_{\frac{1}{2}}^2, \tag{2}$$

$$m_{\tilde{\chi}_1^0} \approx 0.45 m_{\frac{1}{2}}, \tag{3}$$

$$m_{\tilde{\chi}_2^0} \approx m_{\tilde{\chi}_1^\pm} \approx 2 m_{\tilde{\chi}_1^0}, \tag{4}$$

$$m_{\tilde{g}} \approx 2.5 m_{\frac{1}{2}} \tag{5}$$

Despite the simplicity of the SUGRA-MSSM framework, it is nonetheless a very particular model. The mass formulae for sparticles in SUGRA-MSSM model are derived under the assumption that at GUT scale ($M_{GUT} \approx$

$2 \cdot 10^{16}$ GeV) soft supersymmetry breaking terms are universal. However, in general, we can expect that real sparticle masses can differ in a drastic way from the SUGRA-MSSM sparticle masses pattern due to many reasons, see for instance refs. [7, 8, 9, 10, 11]. It is thus appropriate to investigate the LHC SUSY discovery potential in a model-independent way.

3 Simulation of detector response

Our simulations are made at the particle level with parametrized detector responses based on detailed detector simulations. To be specific our estimates have been made for the CMS(Compact Muon Solenoid) detector. The CMS detector fast simulation program CMSJET 4.701 [12] is used. The main aspects of CMSJET relevant to our study are the following:

- Charged particles are tracked in a 4 T magnetic field; a 90 percent reconstruction efficiency per charged track with $p_T > 1$ GeV within $|\eta| < 2.5$ is assumed.

- The geometrical acceptances for μ and e are $|\eta| < 2.4$ and 2.5, respectively. The lepton momentum is smeared according to parametrizations obtained from full GEANT simulations. For a 10 GeV lepton the momentum resolution $\Delta p_T/p_T$ is better than one percent over the full η coverage. For a 100 GeV lepton the resolution becomes $\sim (1-5) \cdot 10^{-2}$ depending on η. We have assumed a 90 percent triggering plus reconstruction efficiency per lepton within the geometrical acceptance of the CMS detector.

- The electromagnetic calorimeter of CMS extends up to $|\eta| = 2.61$. There is a pointing crack in the ECAL barrel/endcap transition region between $|\eta| = 1.478 - 1.566$ (6 ECAL crystals). The hadronic calorimeter covers $|\eta| < 3$. The Very Forward calorimeter extends from $|\eta| > 3$ to $|\eta| < 5$. Noise terms have been simulated with Gaussian distributions and zero suppression cuts have been applied.

- e/γ and hadron shower development are taken into account by parametrization of the lateral and longitudinal profiles of showers. The starting point of a shower is fluctuated according to an exponential law.

- For jet reconstruction we have used a modified UA1 Jet Finding Algorithm, with a cone size of $\Delta R = 0.8$ and 25 GeV transverse energy threshold on jets.

4 Backgrounds. SUSY kinematics

All SUSY processes, with full particle spectrum, couplings, production cross section and decays are generated with ISAJET 7.42, ISASUSY [13]. The Standard Model backgrounds are generated by PYTHIA 5.7 [14]. We have used STEQ3L structure functions.

The following SM processes give the main contribution to the background:

$W + jets,\ Z + jets,\ t\bar{t},\ WZ,\ ZZ,\ b\bar{b}$ and QCD $(2 \to 2)$ processes.

We have not included $Wt\bar{b}$ $(W\bar{t}b)$ backgrounds in our list of the SM backgrounds because there could be some double counting between $W + jets$, $t\bar{t}$ and $Wt\bar{b}(W\bar{t}b)$ backgrounds. We have checked that $Wt\bar{b}$ $(W\bar{t}b)$ backgrounds are less than 25% of $t\bar{t}$ background$^{2)}$. We have checked also that $Zb\bar{b}$ background is less than 5% of the total background and we also did not take into account $Zb\bar{b}$ background not to have double counting with $Z + jets$ background. We believe that more important is an account of higher order corrections for $W + jets$, $Z + jets$, $t\bar{t}$, ... backgrounds.

As it has been mentioned previously in this paper, we consider as signatures $(n \geq l)$ jets plus $(m \geq k)$ isolated leptons plus E_T^{miss}, where $l = 2, 3, 4$ and $k = 0, 1, 2, 3$. Explicitly, we have considered the following signatures :

- $(n \geq l)$ jets plus E_T^{miss},
- $(n \geq l)$ jets plus E_T^{miss} plus no isolated leptons,
- $(n \geq l)$ jets plus E_T^{miss} plus 1 isolated lepton,
- $(n \geq l)$ jets plus E_T^{miss} plus l^+l^- pair of isolated leptons,
- $(n \geq l)$ jets plus E_T^{miss} plus $l^\pm l^\pm$ pair of isolated leptons,
- $(n \geq l)$ jets plus E_T^{miss} plus 3 isolated leptons.

For leptons we use the cut $P_{lT} \equiv \sqrt{p_{l1}^2 + p_{l2}^2} \geq P_{lT_0} = 20\ GeV$. Our definition of an isolated lepton coincides with the definition used in the CMSJET code [12]. We use two sets of cuts (a and b) for E_T^{miss} and $E_{Tjet,k}$ $(k = 1, 2, 3, 4)$. Cuts a and b are given in Tables 1 and 2, correspondingly. Besides, we require that $\frac{N_s}{N_b} \geq 0.25$. We have calculated the SM backgrounds for different values of $E^0_{Tjet1},\ E^0_{Tjet2},\ E^0_{Tjet3},\ E^0_{Tjet4},\ E^0_{Tmiss}$ using PYTHIA 5.7 [14]. We have considered two values of $tan\beta = 5$ and $tan\beta = 35$ $(tan\beta \equiv \frac{<H_t>}{<H_b>})$. We considered both cases of heavy and relatively light gluino. We considered different values of LSP mass and the ratio $\frac{m_{\tilde{\chi}_2^0}}{m_{\tilde{\chi}_1^0}}$. In our calculations we took for the masses of the first and second squark generations $m_{\tilde{q}_{1,2}} = 3800\ GeV$, the results however practically do not depend on the value of $m_{\tilde{q}_{1,2}}$ for $m_{\tilde{q}_{1,2}} \geq 2500\ GeV$.

5 Results

The results of our calculations are shown in Tables (3-40) and in Fig.(1-4).

Note that there is a crucial difference between the “future” experiment and the “real” experiment [16]. In the “real” experiment the total number of events N_{ev} is a given number and we compare it with expected N_b when

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$^{2)}$ N.V.K. is indebted to S. Abdullin who also confirmed that $Wt\bar{b}(W\bar{t}b)$ backgrounds are small.

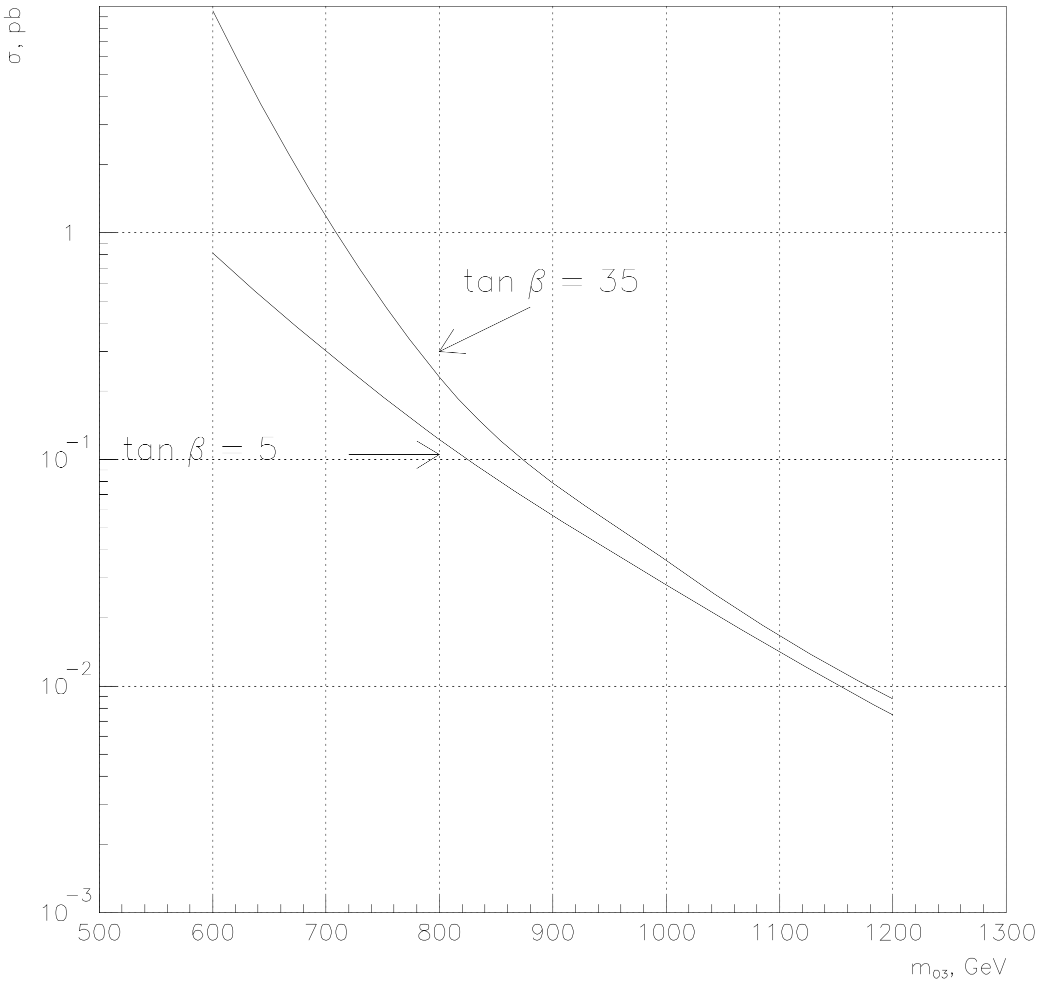

Figure 1: Dependence of the cross section $pp \to squarks, gluino + \ldots$ on the 3^{rd} generation soft breaking mass m_{0_3} for $m_{\tilde{g}} = 2000\,GeV$, $m_{\tilde{q}_{1,2}} = 3800\,GeV$ and for two values of $\tan\beta$.

we test the validity of standard physics. In the condition of the "future" experiment we know only the average number of the background events N_b and the average number of signal events N_s, so we have to compare the Poisson distributions $P(n, N_b)$ and $P(n, N_b + N_s)$ to determine the probability to find new physics in the future experiment. According to the common definition, the discovery potential for new physics corresponds to the case when the probability that the background can imitate the signal is less than $5 \cdot \sigma$, or in terms of the probability less than $\Delta = 5.6 \cdot 10^{-7}$. So we require that the probability $\beta(\Delta)$ of the background fluctuations for $n > n_0(\Delta)$ is less than Δ, namely,

$$\beta(\Delta) = \sum_{n=n_0(\Delta)+1}^{\infty} P(n, N_b) \leq \Delta$$

The discovery probability $1 - \alpha(\Delta)$ that the number of signal events will be bigger than $n_0(\Delta)$ is equal to

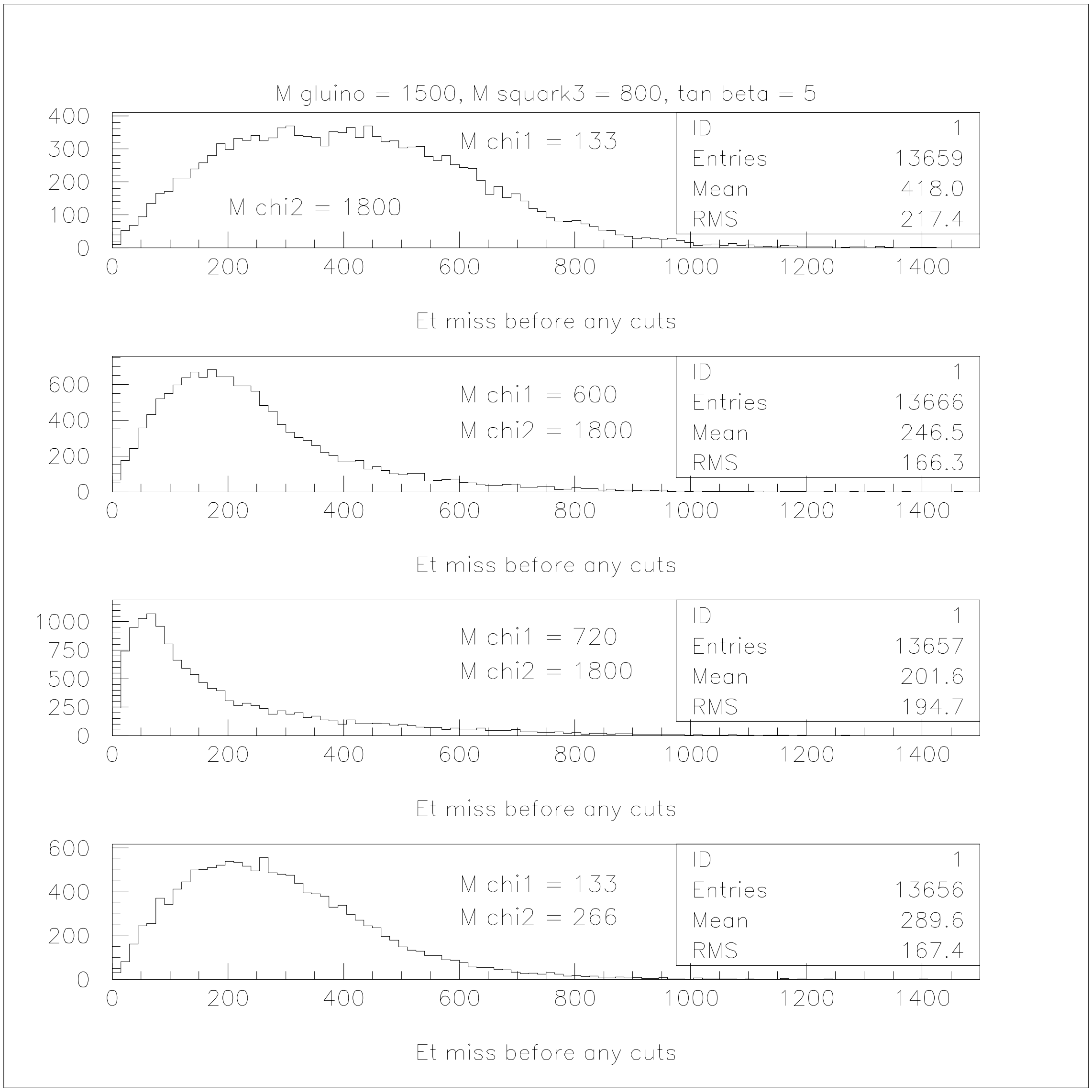

Figure 2: The E_t^{miss} distribution before any cuts for different masses $\tilde{\chi}_1^0$ and $\tilde{\chi}_2^0$. All masses and E_T^{miss} are in GeV.

$$1 - \alpha(\Delta) = \sum_{n=n_0(\Delta)+1}^{\infty} P(n, N_b + N_s).$$

We require that $1 - \alpha(\Delta) \geq 0.5$.

As follows from our results, for fixed values of squark and gluino masses the visibility of signal decreases with the increase of the LSP mass. This fact has a trivial explanation. Indeed, in the rest frame of the squark or gluino the jets spectrum becomes softer with increasing LSP mass. Furthermore in the parton model pair-produced squarks and gluino are produced with total transverse momentum close to zero. For high LSP masses a partial cancellation of missing transverse momenta from the two LSP particles takes place.

Note that for the case of relatively light 3^{rd} generation squarks b-quarks dominate in the final state. In our calculations we have not used b-tagging to suppress the background and to make signal more observable.

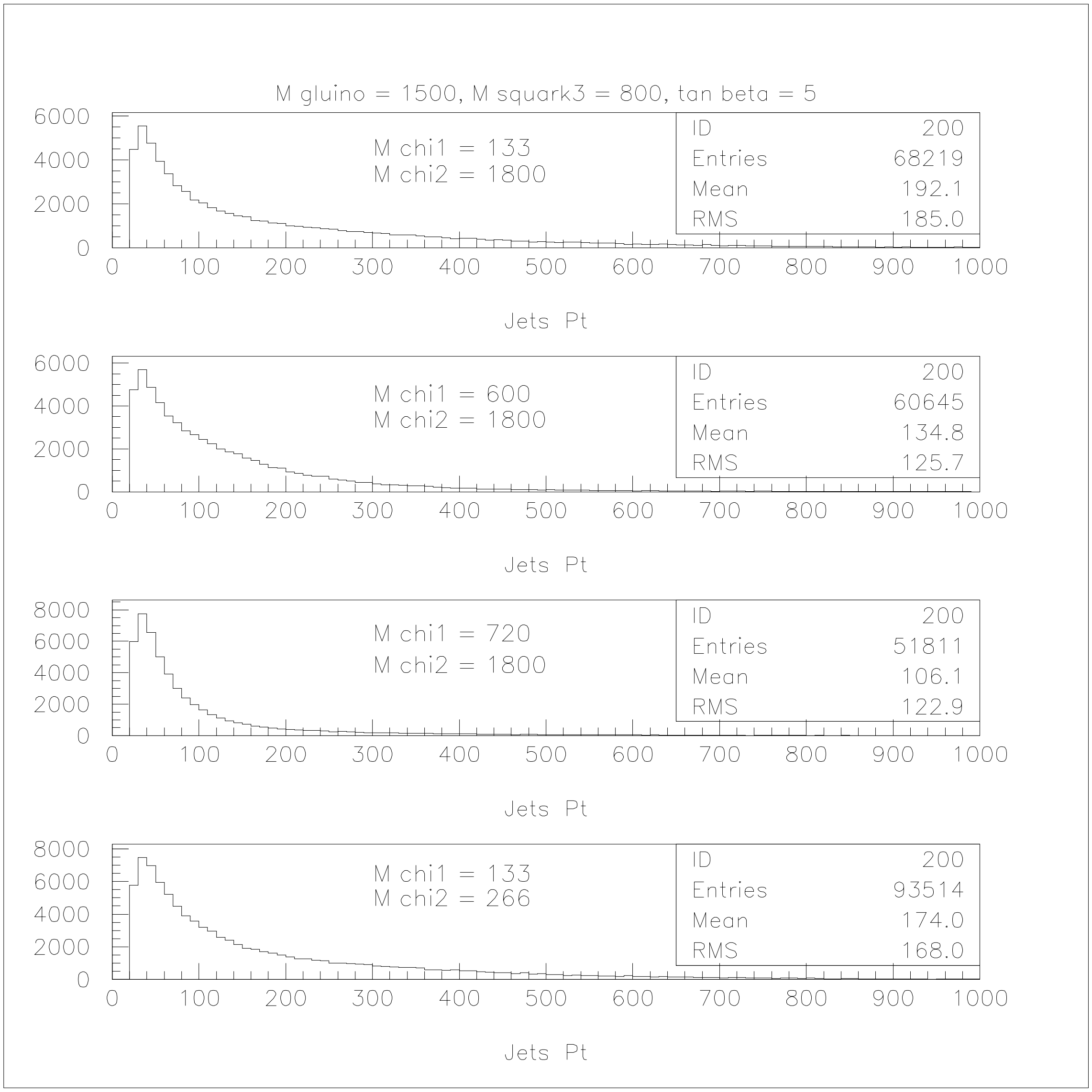

Figure 3: The p_t^{jet} distribution before any cuts for different masses $\tilde{\chi}_1^0$ and $\tilde{\chi}_2^0$. All masses and p_t^{jets} are in GeV.

6 Conclusion

In this paper we show results of an investigation of the LHC (CMS) SUSY discovery potential for models with effective supersymmetry. We have considered a general case of nonuniversal gaugino masses. We have found that the visibility of a signal through an excess over SM backgrounds in $jets + isolated\, leptons + E_T^{miss}$ events depends rather strongly on the relation between LSP, second neutralino, gluino and 3^{rd} generation squark masses, and it decreases with the increase of LSP mass. For relatively heavy gluino it would be very difficult, or even impossible, to detect a SUSY signal even for light 3^{rd} generation squarks ($m_{\tilde{q}_3} \leq 1\ TeV$) - if the LSP mass is close to the 3^{rd} generation squark mass.

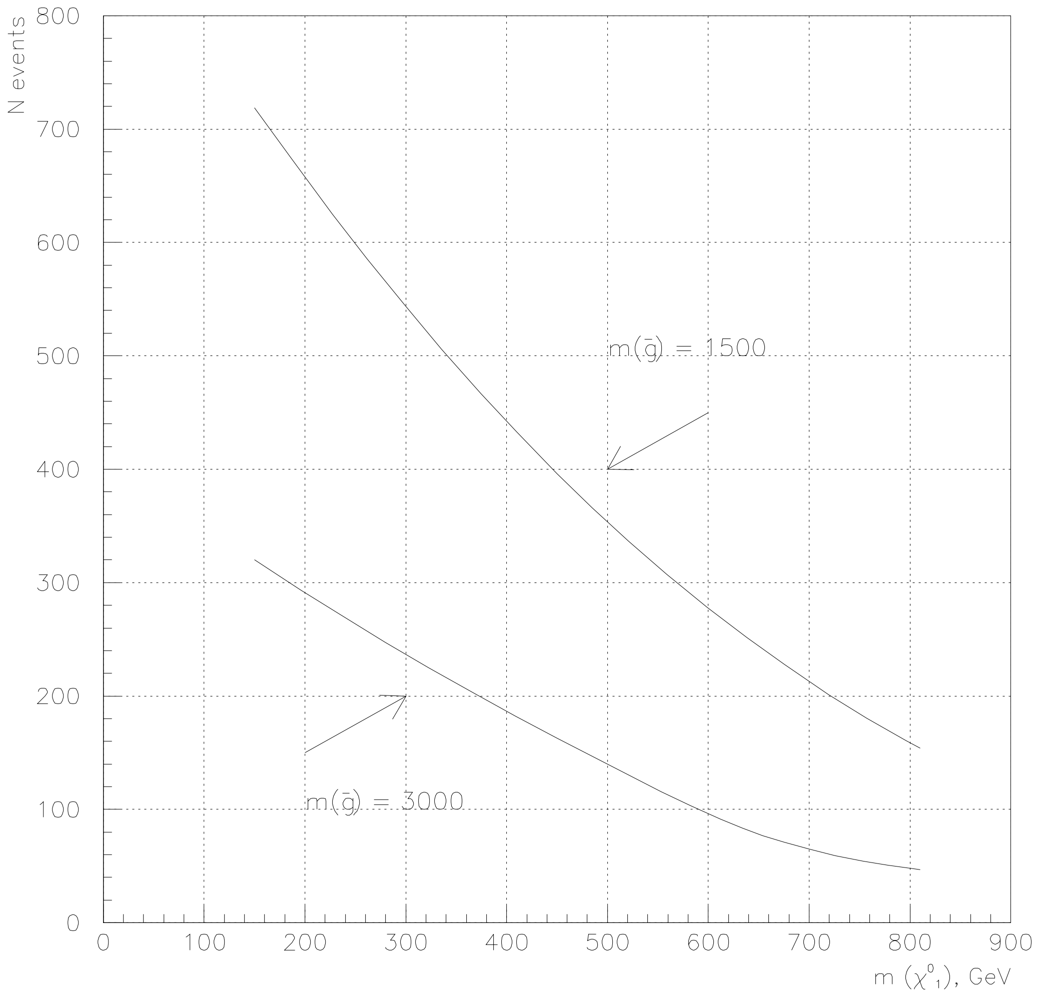

Figure 4: Dependence of the number of signal events on the LSP mass for $m_{\tilde{q}_3} = 900\,GeV$, $m_{\tilde{q}_{1,2}} = 3800\,GeV$, $\mu = 1500\,GeV$, $tan\ \beta\ = 5$, $m_{\tilde{\chi}_2^0} = 1800\,GeV$ and $L\ =\ 10^5$ pb^{-1} for cut 10b (Table 2) and $n_{jet} \geq 4$.

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Table 1: Cuts a.

# of cut	p_{t1} [GeV]	p_{t2} [GeV]	p_{t3} [GeV]	p_{t4} [GeV]	E_t^{miss} [GeV]
1	40.0	40.0	40.0	40.0	200.0
2	100.0	100.0	100.0	100.0	200.0
3	100.0	150.0	150.0	150.0	200.0
4	50.0	100.0	100.0	100.0	200.0
5	200.0	200.0	200.0	200.0	400.0
6	200.0	300.0	300.0	300.0	400.0
7	100.0	200.0	200.0	200.0	400.0
8	300.0	300.0	300.0	300.0	600.0
9	300.0	450.0	450.0	450.0	600.0
10	150.0	300.0	300.0	300.0	600.0
11	400.0	400.0	400.0	400.0	800.0
12	400.0	600.0	600.0	600.0	800.0
13	200.0	400.0	400.0	400.0	800.0
14	500.0	500.0	500.0	500.0	1000.0
15	500.0	750.0	750.0	750.0	1000.0
16	250.0	500.0	500.0	500.0	1000.0
17	600.0	600.0	600.0	600.0	1200.0
18	600.0	900.0	900.0	900.0	1200.0
19	300.0	600.0	600.0	600.0	1200.0

Table 2: Cuts b.

# of cut	p_{t1} [GeV]	p_{t2} [GeV]	p_{t3} [GeV]	p_{t4} [GeV]	E_t^{miss} [GeV]
1	40.0	40.0	40.0	40.0	200.0
2	100.0	125.0	150.0	150.0	200.0
3	166.7	208.3	250.0	250.0	200.0
4	233.3	291.7	350.0	350.0	200.0
5	300.0	375.0	450.0	450.0	200.0
6	100.0	125.0	150.0	150.0	400.0
7	166.7	208.3	250.0	250.0	400.0
8	233.3	291.7	350.0	350.0	400.0
9	300.0	375.0	450.0	450.0	400.0
10	100.0	125.0	150.0	150.0	600.0
11	166.7	208.3	250.0	250.0	600.0
12	233.3	291.7	350.0	350.0	600.0
13	300.0	375.0	450.0	450.0	600.0
14	100.0	125.0	150.0	150.0	800.0
15	166.7	208.3	250.0	250.0	800.0
16	233.3	291.7	350.0	350.0	800.0
17	300.0	375.0	450.0	450.0	800.0
18	100.0	125.0	150.0	150.0	1000.0
19	166.7	208.3	250.0	250.0	1000.0
20	233.3	291.7	350.0	350.0	1000.0
21	300.0	375.0	450.0	450.0	1000.0
22	100.0	125.0	150.0	150.0	1200.0
23	166.7	208.3	250.0	250.0	1200.0
24	233.3	291.7	350.0	350.0	1200.0
25	300.0	375.0	450.0	450.0	1200.0

The discovery potential of CMS for different values of luminosity, $m_{0_3},\ m_{\tilde{g}}$ and $tan\ \beta$ is shown in Tables 3-40. Here $+\ (-)$ means that signal is detectable (non detectable). All masses are in GeV. The parameter m_{0_3} is the soft supersymmetry breaking mass of the 3^{rd} generation squarks. It is equal to squark mass before electroweak symmetry breaking.

Table 3: $m_{0_3} = 900$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 2000$, $\mu = 1800$, $tan\ \beta$=35, σ=0.067pb, $L\ =\ 10^4$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^{\pm}$	l^+l^-	$l^{\pm}l^{\pm}$	3 l
150,1800	+	+	-	-	-	-
450,1800	-	-	-	-	-	-
675,1800	-	-	-	-	-	-
810,1800	-	-	-	-	-	-
150,450	-	-	-	-	-	-
150,675	+	+	-	-	-	-
450,675	-	-	-	-	-	-
675,810	-	-	-	-	-	-

Table 4: $m_{\tilde{q}_3} = 800$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 2000$, $\mu = 1800$, $tan\ \beta$=5, σ=0.12pb, $L\ =\ 10^4$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^{\pm}$	l^+l^-	$l^{\pm}l^{\pm}$	3 l
133,1800	+	+	-	-	-	-
400,1800	-	-	-	-	-	-
600,1800	-	-	-	-	-	-
720,1800	-	-	-	-	-	-
133,266	-	-	-	-	-	-
133,600	+	-	-	-	-	-
400,720	-	-	-	-	-	-
450,540	-	-	-	-	-	-

Table 5: $m_{0_3} = 800$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 2000$, $\mu = 1800$, $tan\ \beta$=35, σ=0.18pb, $L\ =\ 10^4$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^{\pm}$	$l^{+}l^{-}$	$l^{\pm}l^{\pm}$	$3\ l$
133,1800	+	+	-	-	-	-
400,1800	-	-	-	-	-	-
600,1800	-	-	-	-	-	-
720,1800	-	-	-	-	-	-
133,266	-	-	-	-	-	-
133,600	+	+	-	-	-	-
400,720	-	-	-	-	-	-
450,540	-	-	-	-	-	-

Table 6: $m_{\tilde{q}_3} = 700$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 2000$, $\mu = 1800$, $tan\ \beta$=5, σ=0.28pb, $L\ =\ 10^4$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^{\pm}$	$l^{+}l^{-}$	$l^{\pm}l^{\pm}$	$3\ l$
116,1800	+	+	-	-	-	-
350,1800	-	-	-	-	-	-
525,1800	-	-	-	-	-	-
630,1800	-	-	-	-	-	-
116,350	+	-	-	-	-	-
116,525	+	+	-	-	-	-
350,525	-	-	-	-	-	-
525,630	-	-	-	-	-	-

Table 7: $m_{0_3} = 700$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 2000$, $\mu = 1800$, $tan\ \beta$=35, σ=0.49pb, $L\ =\ 10^4$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^{\pm}$	$l^{+}l^{-}$	$l^{\pm}l^{\pm}$	$3\ l$
116,1800	+	+	-	-	-	-
350,1800	-	-	-	-	-	-
525,1800	-	-	-	-	-	-
630,1800	-	+	-	-	-	-
116,350	+	+	-	-	-	-
116,525	+	+	-	-	-	-
350,525	+	+	-	-	-	-
525,630	-	-	-	-	-	-

Table 8: $m_{\tilde{q}_3} = 700$, $m_{\tilde{q}_{1,2}} = 1550$, $m_{\tilde{g}} = 600$, $\mu = 1800$, $tan\ \beta$=5, σ=10pb, $L\ =\ 10^4$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^\pm$	l^+l^-	$l^\pm l^\pm$	3 l
100,570	+	+	+	+	+	+
300,570	+	+	-	-	-	-
450,570	+	+	-	-	-	-
540,570	+	+	-	-	-	-

Table 9: $m_{0_3} = 700$, $m_{\tilde{q}_{1,2}} = 1550$, $m_{\tilde{g}} = 600$, $\mu = 1800$, $tan\ \beta$=35, σ=10pb, $L\ =\ 10^4$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^\pm$	l^+l^-	$l^\pm l^\pm$	3 l
100,570	+	+	+	-	-	-
300,570	+	+	-	-	-	-
450,570	+	+	-	-	-	-
540,570	+	+	-	-	-	-

Table 10: $m_{\tilde{q}_3} = 600$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 2000$, $\mu = 1800$, $tan\ \beta$=5, σ=0.77pb, $L\ =\ 10^4$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^\pm$	l^+l^-	$l^\pm l^\pm$	3 l
100,1800	+	+	-	-	-	-
300,1800	+	+	-	-	-	-
450,1800	-	-	-	-	-	-
540,1800	-	-	-	-	-	-
100,300	+	+	-	-	-	-
100,450	+	+	-	-	-	-
300,450	-	-	-	-	-	-
450,540	-	-	-	-	-	-

Table 11: $m_{0_3} = 600$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 2000$, $\mu = 1800$, $tan\ \beta$=35, σ=2.1pb, $L\ =\ 10^4$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^\pm$	l^+l^-	$l^\pm l^\pm$	3 l
100,1800	+	+	-	-	-	-
300,1800	-	+	-	-	-	-
450,1800	-	+	-	-	-	-
540,1800	-	+	-	-	-	-
100,300	+	+	-	-	+	+
100,450	+	+	-	-	-	-
300,450	-	-	-	-	-	-
450,540	-	-	-	-	-	-

Table 12: $m_{\tilde{q}_3} = 500$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 2000$, $\mu = 1800$, $tan\ \beta$=5, σ=2.2pb, $L\ =\ 10^4$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^\pm$	l^+l^-	$l^\pm l^\pm$	3 l
83,1800	+	+	-	-	-	-
250,1800	+	+	-	-	-	-
375,1800	-	+	-	-	-	-
450,1800	-	-	-	-	-	-
83,250	+	+	-	-	-	-
83,375	-	+	-	-	-	-
250,375	-	+	-	-	-	-
375,450	-	+	-	-	-	-

Table 13: $m_{\tilde{g}} = 3500$, $m_{\tilde{q}_{1,2}} = 3800$, μ=1800, $L\ =\ 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	$tan\ \beta$		incl	no lept.	$l^\pm$	l^+l^-	$l^\pm l^\pm$	3 l
166,1800	5	$m_{\tilde{q}_3}$=1000	+	+	-	-	-	-
$\frac{m_{\tilde{q}_3}}{6}$,1800	5	$m_{\tilde{q}_3}$=1100	-	-	-	-	-	-
$\frac{m_{\tilde{q}_3}}{6}$,1800	5	$m_{\tilde{q}_3}$=1200	-	-	-	-	-	-
$\frac{m_{0_3}}{6}$,1800	35	m_{0_3}=1000	+	-	-	-	-	-
$\frac{m_{0_3}}{6}$,1800	35	m_{0_3}=1100	-	-	-	-	-	-
$\frac{m_{0_3}}{6}$,1800	35	m_{0_3}=1200	-	-	-	-	-	-

Table 14: $m_{\tilde{q}_3} = 1200$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 1500$, $\mu = 1800$, $tan\ \beta$=5 σ=0.017pb, $L = 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^\pm$	l^+l^-	$l^\pm l^\pm$	3 l
200,1800	+	+	-	-	-	-
600,1800	+	-	-	-	-	-
900,1800	-	-	-	-	-	-
1080,1800	-	-	-	-	-	-
200,400	+	-	-	-	-	-
200,600	+	-	-	-	+	-
600,900	+	-	-	-	-	-

Table 15: $m_{0_3} = 1200$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 1500$, μ=1800, $tan\ \beta$=35, σ=0.018pb, $L = 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^\pm$	l^+l^-	$l^\pm l^\pm$	3 l
200,1800	+	+	-	-	-	-
600,1800	+	-	-	-	-	-
900,1800	-	-	-	-	-	-
1080,1800	+	+	-	-	-	-
200,400	+	-	-	-	-	-
200,600	+	-	+	-	+	-
600,900	+	-	-	-	-	-
900,1080	-	-	-	-	-	-

Table 16: $m_{\tilde{q}_3} = 1000$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 2000$, μ=1800, $tan\ \beta$=5, σ=0.027pb, $L\ =\ 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^\pm$	l^+l^-	$l^\pm l^\pm$	$3\ l$
170,1800	+	+	-	-	-	-
500,1800	-	-	-	-	-	-
750,1800	-	-	-	-	-	-
900,1800	-	-	-	-	-	-
170,330	-	-	-	-	-	-
170,750	+	+	-	-	-	-
500,900	-	-	-	-	-	-
750,900	-	-	-	-	-	-

Table 17: $m_{\tilde{q}_3} = 1000$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 1750$, μ=1800, $tan\ \beta$=5, σ=0.032pb, $L\ =\ 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^\pm$	l^+l^-	$l^\pm l^\pm$	$3\ l$
170,1800	+	+	-	-	-	-
500,1800	-	-	-	-	-	-
750,1800	-	-	-	-	-	-
900,1800	-	-	-	-	-	-
170,330	+	-	-	-	-	-
170,750	+	-	-	-	-	-
500,900	+	-	-	-	-	-
750,900	-	-	-	-	-	-

Table 18: $m_{\tilde{q}_3} = 1000$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 1500$, μ=1800, $tan\ \beta$=5, σ=0.036pb, $L\ =\ 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^\pm$	l^+l^-	$l^\pm l^\pm$	$3\ l$
166,1800	+	+	-	-	-	-
500,1800	+	+	-	-	-	-
750,1800	-	-	-	-	-	-
900,1800	-	-	-	-	-	-
166,332	+	-	+	-	-	-
166,750	+	+	+	-	+	-
500,900	+	+	-	-	-	-
750,900	-	-	-	-	-	-

Table 19: $m_{\tilde{q}_3} = 1000$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 1250$, μ=1800, $tan\ \beta$=5, σ=0.075pb, $L = 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^\pm$	l^+l^-	$l^\pm l^\pm$	3 l
166,1800	+	+	+	+	+	-
500,1800	+	+	-	-	+	-
750,1800	+	-	-	-	+	-
900,1800	-	-	-	-	-	-
166,332	+	+	-	-	+	-
166,750	+	+	+	+	+	+
500,900	+	+	-	-	-	-
750,900	+	+	-	-	+	-

Table 20: $m_{0_3} = 1000$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 3500$, μ=1800, $tan\ \beta$=35, σ=0.030pb, $L = 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^\pm$	l^+l^-	$l^\pm l^\pm$	3 l
166,1800	+	-	-	-	-	-
500,1800	-	-	-	-	-	-
750,1800	-	-	-	-	-	-
850,1800	-	-	-	-	-	-
166,322	-	-	-	-	-	-
166,750	+	-	-	-	-	-
500,750	-	-	-	-	-	-
500,900	-	-	-	-	-	-
750,900	-	-	-	-	-	-

Table 21: $m_{\tilde{q}_3} = 1000$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 2000$, μ=500, $tan\ \beta$=5, σ=0.027pb, $L = 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^\pm$	l^+l^-	$l^\pm l^\pm$	3 l
170,1800	+	-	-	+	-	+
500,1800	-	-	-	-	-	-
750,1800	-	-	-	-	-	-
900,1800	-	-	-	-	-	-
170,330	-	-	-	-	+	+
170,750	+	-	-	-	+	+
500,900	-	-	-	-	-	-
750,900	-	-	-	-	-	-

Table 22: $m_{0_3} = 1000$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 2000$, μ=500, $tan\ \beta$=35, σ=0.031pb, $L\ =\ 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^{\pm}$	l^+l^-	$l^{\pm}l^{\pm}$	$3\ l$
170,1800	+	-	-	-	-	+
500,1800	-	-	-	-	-	-
750,1800	-	-	-	-	-	-
900,1800	-	-	-	-	-	-
170,330	-	-	-	-	+	+
170,750	+	-	-	-	+	+
500,900	-	-	-	-	-	-
750,900	-	-	-	-	-	-

Table 23: $m_{\tilde{q}_3} = 1000$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 2000$, μ=800, $tan\ \beta$=5, σ=0.026pb, $L\ =\ 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^{\pm}$	l^+l^-	$l^{\pm}l^{\pm}$	$3\ l$
170,1800	+	+	-	-	-	-
500,1800	-	-	-	-	-	-
750,1800	-	-	-	-	+	-
900,1800	-	-	-	-	-	-
170,330	-	-	-	-	+	-
170,750	+	-	-	-	-	-
500,900	-	-	-	-	-	-
750,900	-	-	-	-	-	-

Table 24: $m_{0_3} = 1000$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 2000$, μ=800, $tan\ \beta$=35, σ=0.031pb, $L\ =\ 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^{\pm}$	l^+l^-	$l^{\pm}l^{\pm}$	$3\ l$
170,1800	+	+	-	-	-	-
500,1800	-	-	-	-	-	-
750,1800	-	-	-	-	-	-
900,1800	-	-	-	-	-	-
170,330	-	-	-	-	+	+
170,750	+	+	-	-	-	-
500,900	-	-	-	-	-	-
750,900	-	-	-	-	-	-

Table 25: $m_{0_3} = 900$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 3500$, μ=1800, $tan\ \beta$=35, σ=0.071pb, $L = 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^\pm$	l^+l^-	$l^\pm l^\pm$	$3\ l$
150,1800	+	+	-	-	-	-
450,1800	-	-	-	-	-	-
675,1800	-	-	-	-	-	-
750,1800	-	-	-	-	-	-
150,300	-	-	-	-	+	-
150,675	+	+	-	-	-	-
450,675	-	-	-	-	-	-
450,810	-	-	-	-	-	-
675,810	-	-	-	-	-	-

Table 26: $m_{\tilde{q}_3} = 900$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 2000$, μ=450, $tan\ \beta$=5, σ=0.057pb, $L = 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^\pm$	l^+l^-	$l^\pm l^\pm$	$3\ l$
150,1800	+	+	-	+	-	+
450,1800	-	-	-	+	-	-
675,1800	-	-	-	-	-	-
810,1800	-	+	-	-	-	-
150,450	+	-	-	-	+	-
150,675	+	-	-	-	+	+
450,675	-	-	-	-	+	-
675,810	-	-	-	-	+	-

Table 27: $m_{0_3} = 900$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 2000$, μ=450, $tan\ \beta$=35, σ=0.063pb, $L\ =\ 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^{\pm}$	l^+l^-	$l^{\pm}l^{\pm}$	$3\ l$
150,1800	+	-	-	+	+	+
450,1800	-	-	-	-	-	-
675,1800	+	-	-	-	-	-
810,1800	-	-	-	-	-	-
150,450	+	-	-	-	+	+
150,675	+	-	-	+	+	+
450,675	-	-	-	-	+	-
675,810	-	-	-	-	-	-

Table 28: $m_{0_3} = 900$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 2000$, μ=2$m_{\chi_1^0}$, $tan\ \beta$=35, σ=0.071pb, $L\ =\ 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^{\pm}$	l^+l^-	$l^{\pm}l^{\pm}$	$3\ l$
150,1800	+	+	-	-	+	+
450,1800	-	-	-	-	-	-
675,1800	-	-	-	-	-	-
150,450	+	-	-	-	+	+
150,675	+	+	-	+	+	+
450,675	-	-	-	-	-	-
675,810	-	-	-	-	-	-

Table 29: $m_{\tilde{q}_3} = 800$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 2000$, μ=1800, $tan\ \beta$=5, σ=0.12pb, $L\ =\ 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^{\pm}$	l^+l^-	$l^{\pm}l^{\pm}$	$3\ l$
133,1800	+	+	-	-	+	-
400,1800	+	+	-	-	-	-
600,1800	-	-	-	-	-	-
720,1800	-	-	-	-	-	-
133,266	-	-	-	-	+	-
133,600	+	+	-	-	-	-
400,720	+	+	-	-	-	-
450,540	-	-	-	-	-	-

Table 30: $m_{\tilde{q}_3} = 800$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 1500$, μ=1800, $tan\ \beta$=5, σ=0.13pb, $L\ =\ 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^{\pm}$	l^+l^-	$l^{\pm}l^{\pm}$	3 l
133,1800	+	+	+	+	+	+
400,1800	+	+	-	+	+	+
600,1800	+	+	-	-	+	+
720,1800	+	+	-	-	-	-
133,266	+	+	+	+	+	-
133,600	+	+	+	+	+	+

Table 31: $m_{\tilde{q}_3} = 800$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 1000$, μ=1800, $tan\ \beta$=5, σ=0.14pb, $L\ =\ 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^{\pm}$	l^+l^-	$l^{\pm}l^{\pm}$	3 l
133,1800	+	+	+	+	+	+
400,1800	+	+	+	-	+	+
600,1800	+	+	-	-	+	-
720,1800	+	+	-	-	+	-
133,266	+	+	+	+	+	+
133,600	+	+	+	+	+	+
400,720	+	+	-	-	+	+
600,720	+	+	-	-	+	-

Table 32: $m_{0_3} = 800$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 3500$, μ=1800, $tan\ \beta$=35, σ=0.18pb, $L\ =\ 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^{\pm}$	l^+l^-	$l^{\pm}l^{\pm}$	3 l
133,1800	+	+	-	-	-	-
400,1800	-	-	-	-	-	-
600,1800	-	-	-	-	-	-
720,1800	+	+	+	-	-	-
133,266	-	-	-	-	+	+
133,600	+	+	-	+	+	+
400,600	-	-	-	-	-	-
400,720	-	-	-	-	-	-
450,540	-	-	-	-	+	+

Table 33: $m_{0_3} = 800$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 1000$, μ=1800, $tan\ \beta$=35, σ=0.47pb, $L\ =\ 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^\pm$	l^+l^-	$l^\pm l^\pm$	3 l
133,1800	+	+	+	+	+	+
400,1800	+	+	+	+	+	-
600,1800	+	+	-	-	+	-
720,1800	+	+	+	+	+	+
133,266	+	+	+	+	+	+
133,600	+	+	+	+	+	+
400,600	+	+	+	+	+	+
400,720	+	+	+	+	+	-

Table 34: $m_{0_3} = 800$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 1500$, μ=1800, $tan\ \beta$=35, σ=0.18pb, $L\ =\ 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^\pm$	l^+l^-	$l^\pm l^\pm$	3 l
133,1800	+	+	-	-	+	-
400,1800	+	+	-	-	-	-
600,1800	-	-	-	-	+	-
720,1800	+	+	-	-	-	-
133,266	+	+	+	+	+	+
133,600	+	+	+	+	+	+
400,600	+	+	-	-	+	-
400,720	+	-	-	+	+	+
600,720	+	-	-	+	+	+

Table 35: $m_{0_3} = 800$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 2000$, μ=1800, $tan\ \beta$=35, σ=0.23pb, $L\ =\ 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^\pm$	l^+l^-	$l^\pm l^\pm$	3 l
166,1800	+	+	-	-	-	-
400,1800	-	-	-	-	-	+
600,1800	-	-	-	-	-	-
720,1800	-	-	-	-	-	-
166,333	+	+	-	-	-	-
166,600	+	+	-	-	-	-
400,600	-	-	-	-	-	-
400,720	-	-	-	-	-	-
600,720	-	-	-	-	-	-

Table 36: $m_{\tilde{q}_3} = 750$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 3500$, μ=1800, $tan\ \beta$=5, σ=0.19pb, $L = 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^{\pm}$	l^+l^-	$l^{\pm}l^{\pm}$	3 l
125,1800	+	+	-	-	+	-
375,1800	-	+	-	-	+	+
560,1800	-	-	-	-	-	-
675,1800	-	-	-	-	-	-
125,250	-	-	-	-	+	-
125,560	+	-	-	-	+	+
375,675	-	-	-	-	-	-
560,675	-	-	-	-	-	-

Table 37: $m_{\tilde{q}_3} = 700$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 3500$, μ=1800, $tan\ \beta$=5, σ=0.28pb, $L = 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^{\pm}$	l^+l^-	$l^{\pm}l^{\pm}$	3 l
117,1800	+	+	-	-	-	-
350,1800	+	+	-	-	-	-
525,1800	-	-	-	-	-	-
630,1800	-	-	-	-	-	-
117,234	-	-	-	+	-	-
117,525	+	+	-	-	-	-
350,525	-	-	-	-	-	-
350,630	-	-	-	-	-	-
525,630	-	-	-	-	-	-

Table 38: $m_{0_3} = 650$, $m_{\tilde{g}} = 3500$, $m_{\tilde{q}_{1,2}} = 3800$, μ=1800, $tan\ \beta$=35, σ=0.94pb, $L = 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^{\pm}$	l^+l^-	$l^{\pm}l^{\pm}$	3 l
108,1800	+	+	-	+	-	-
325,1800	+	+	+	+	-	-
487,1800	+	+	+	+	-	-
585,1800	+	+	+	+	-	-
108,216	-	-	-	+	+	+
108,487	+	+	-	+	-	+
487,585	+	+	+	+	-	+

Table 39: $m_{\tilde{q}_3} = 650$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 3500$, μ=1800, $tan\ \beta$=5, σ=0.48pb, $L\ =\ 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^\pm$	l^+l^-	$l^\pm l^\pm$	3 l
108,1800	+	+	-	-	-	-
325,1800	+	+	-	-	-	-
490,1800	-	-	-	-	-	-
585,1800	-	-	-	-	-	-
108,216	+	+	+	+	+	+
325,490	-	-	-	-	-	-
325,585	+	+	-	-	-	-
490,585	-	-	-	-	-	-
108,490	+	+	-	-	-	-

Table 40: $m_{\tilde{q}_3} = 600$, $m_{\tilde{q}_{1,2}} = 3800$, $m_{\tilde{g}} = 3500$, μ=1800, $tan\ \beta$=5, σ=0.77pb, $L\ =\ 10^5$ pb^{-1}.

$m_{\tilde{\chi}_1}, m_{\tilde{\chi}_2}$	incl	no lept.	$l^\pm$	l^+l^-	$l^\pm l^\pm$	3 l
100,1800	+	+	-	-	-	-
300,1800	+	+	-	-	-	-
450,1800	-	+	-	-	-	-
540,1800	-	-	-	-	-	-
100,200	-	-	-	-	-	-
100,450	+	+	+	-	-	-
300,540	+	+	-	-	-	-
450,540	-	-	-	-	-	-
20,1800	+	+	+	-	-	-