



ATLAS



UNIVERSITÉ
DE GENÈVE

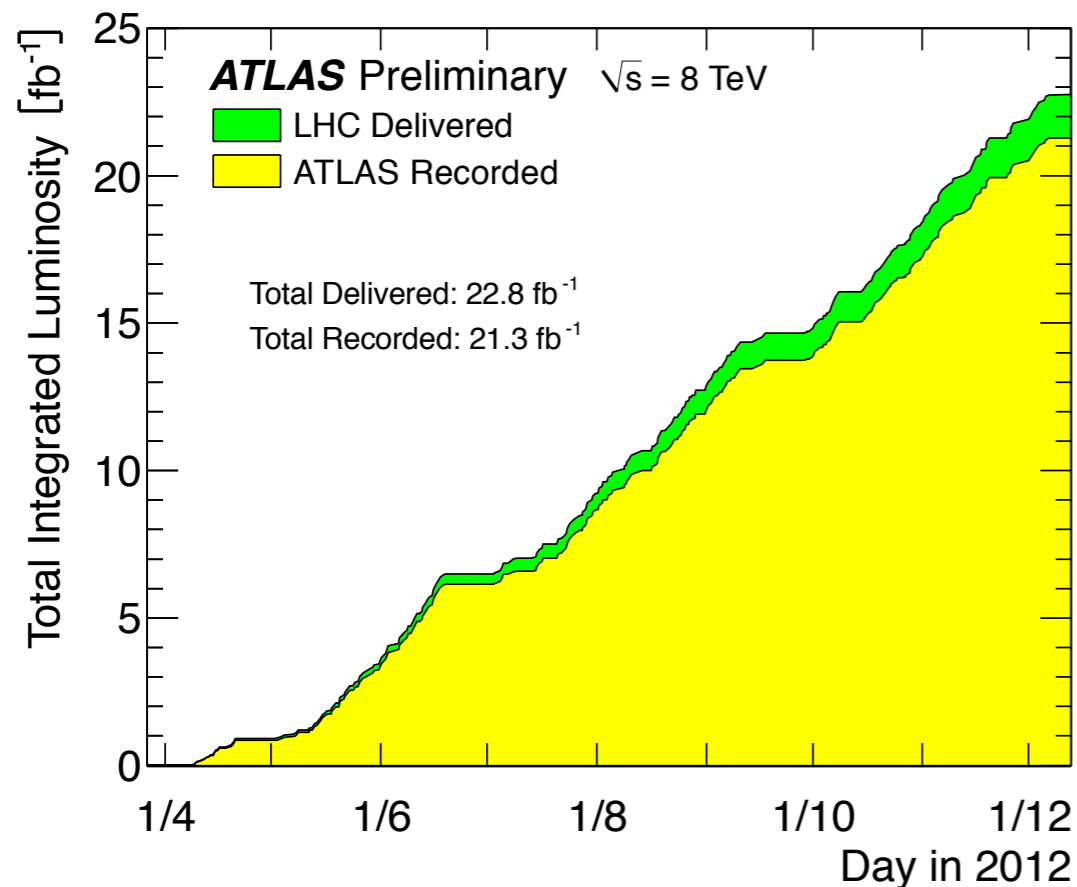
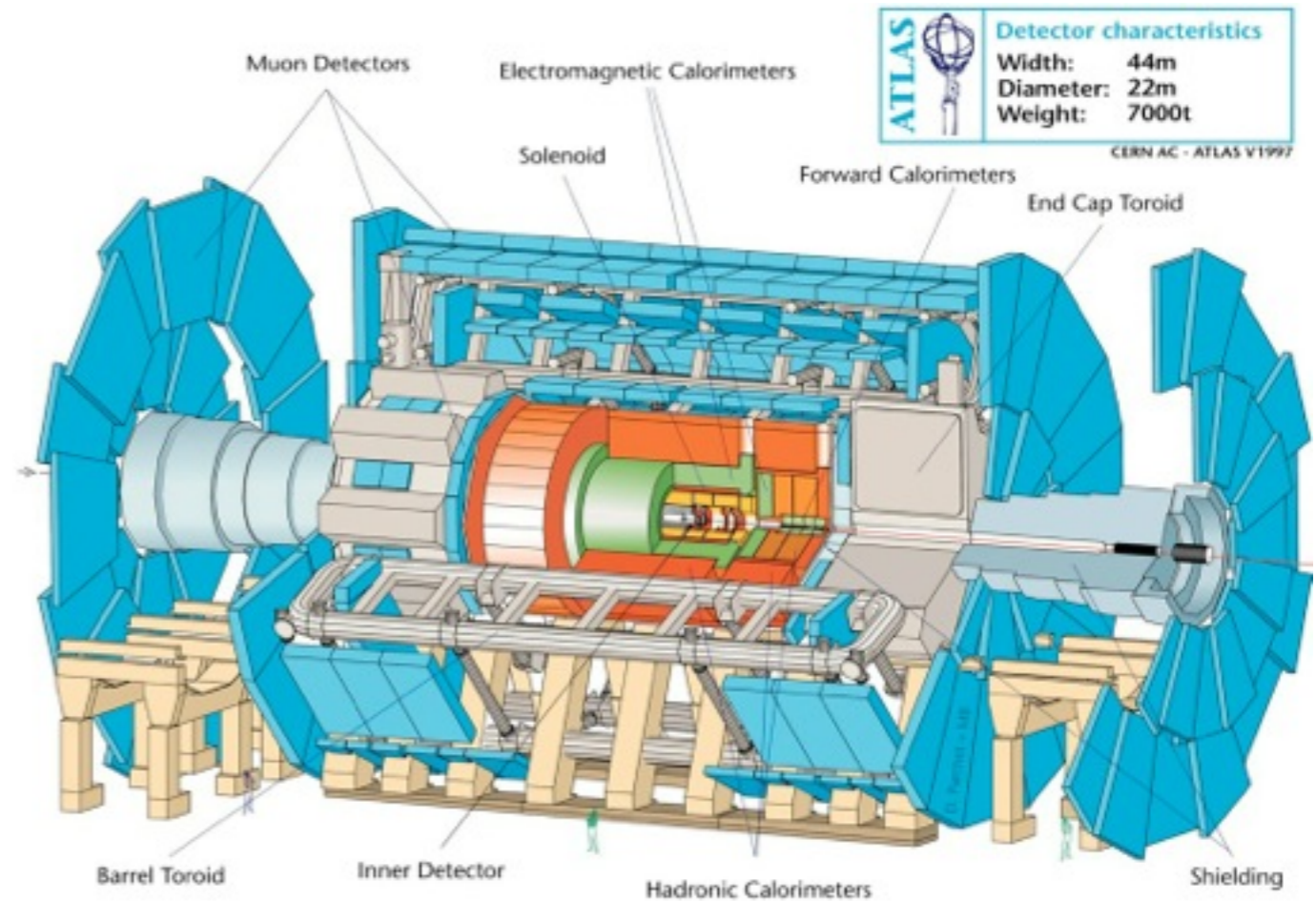
SUSY Searches with the ATLAS Detector

Lucian Ancu - Université de Genève
on behalf of the ATLAS collaboration

Interplay between Particle and Astrophysics, 2014 London

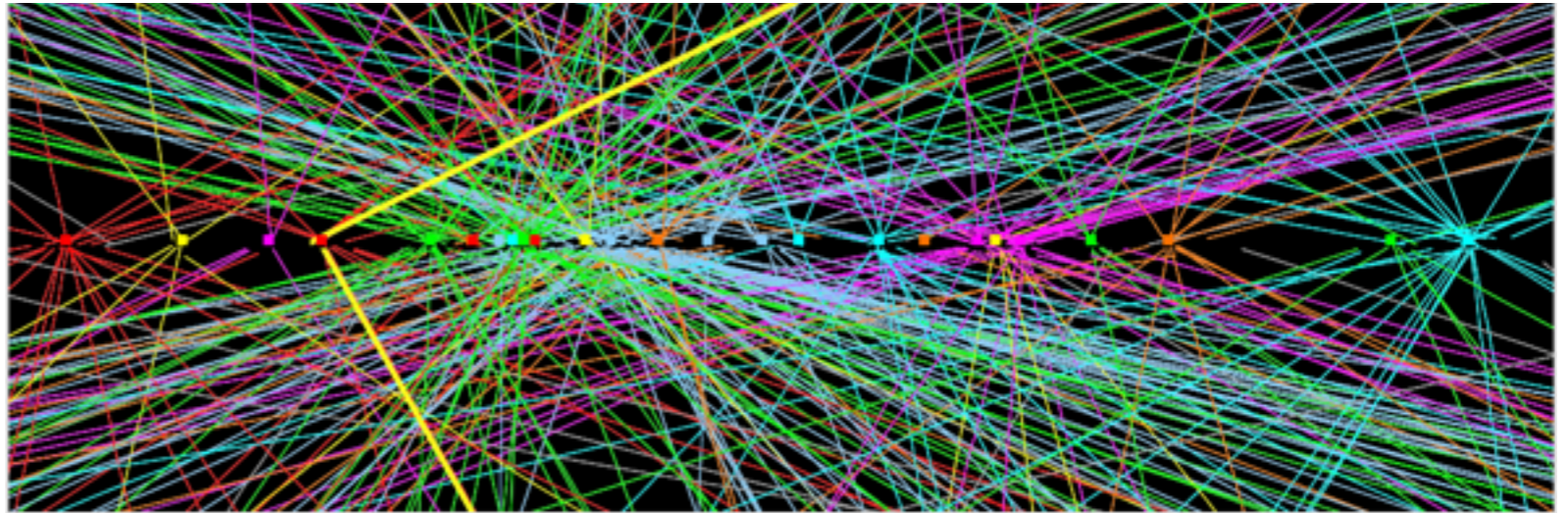
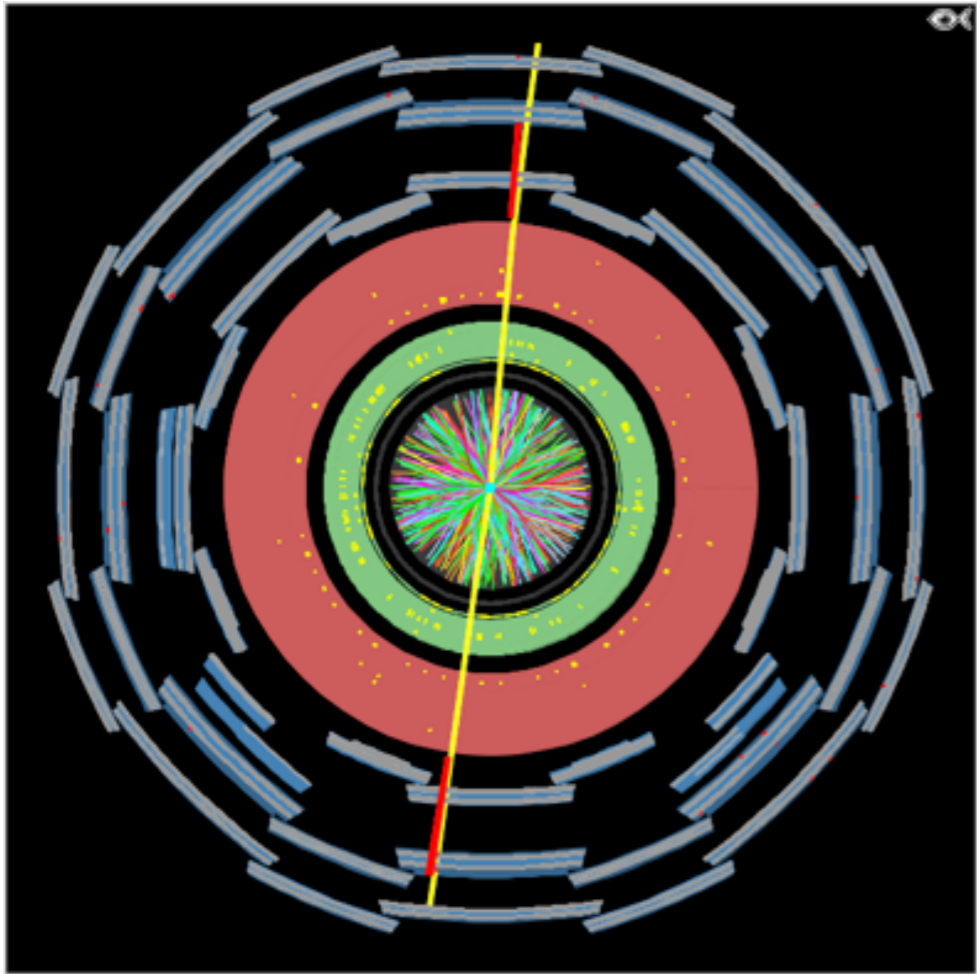
The ATLAS detector

- ATLAS is well suited for detection of many SUSY models in prompt or non-prompt signatures



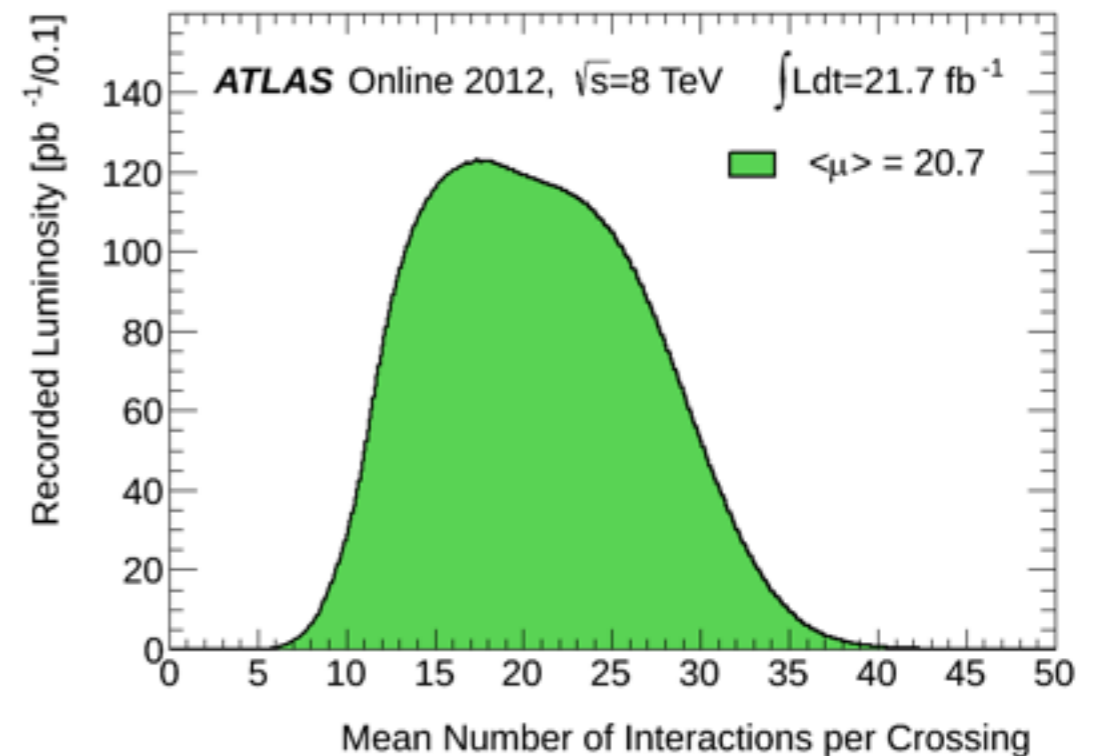
- Reporting on SUSY searches of in up to 20.3 fb^{-1} collected at $\sqrt{s} = 8 \text{ TeV}$.

Physics in a very challenging environment



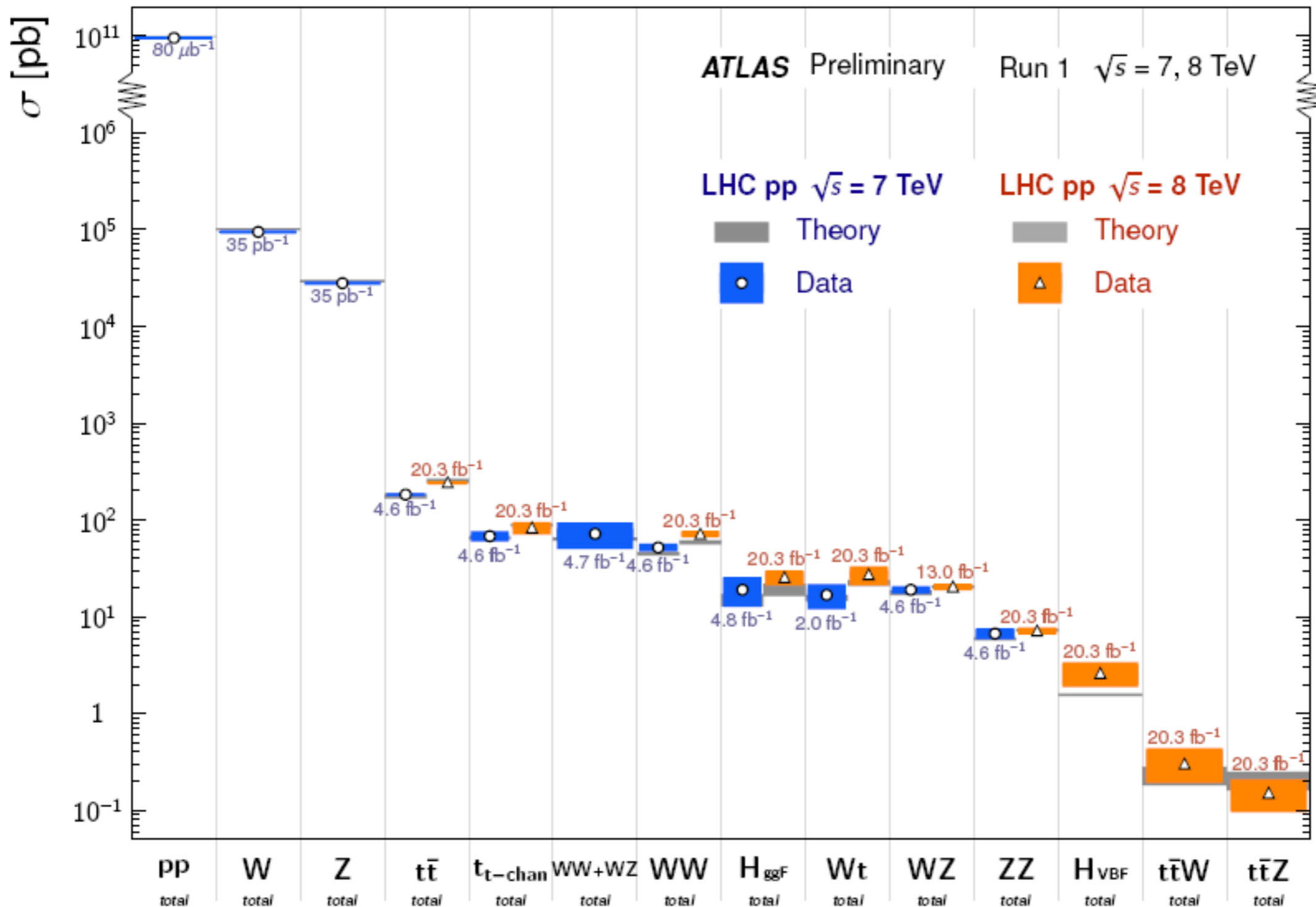
- Z candidate in 25 reconstructed vertices event

- Managed to achieve great understanding of the SM despite the conditions
- The upcoming Run in 2015 will be even more challenging

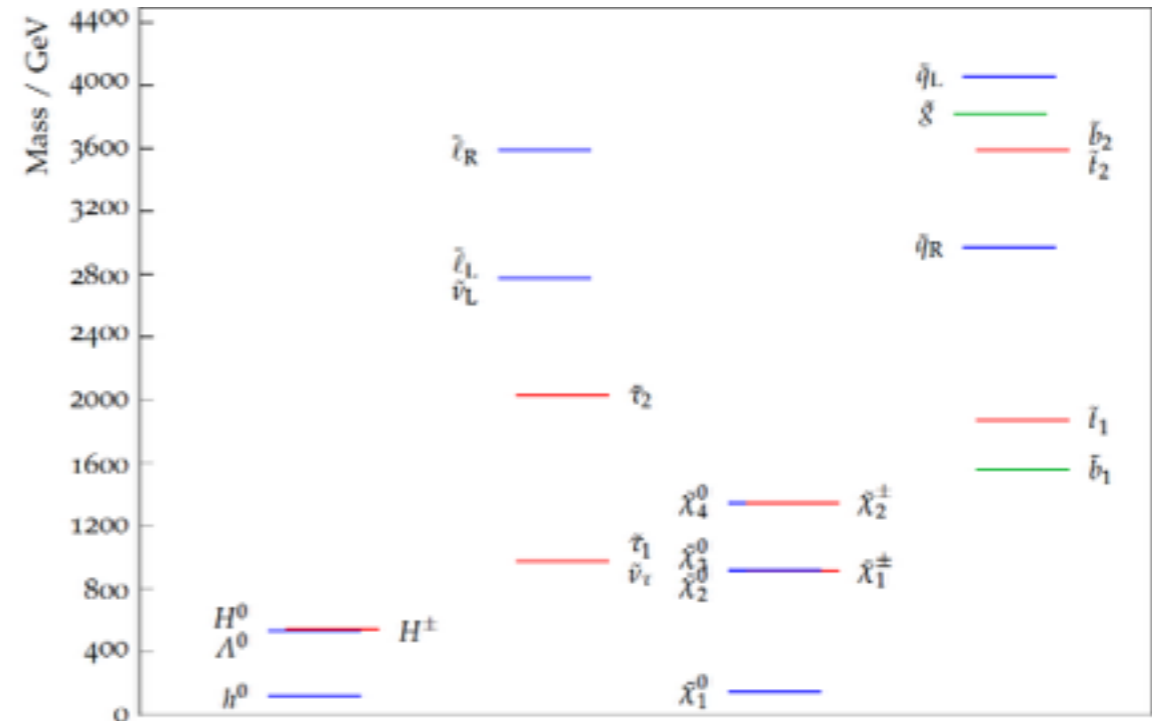
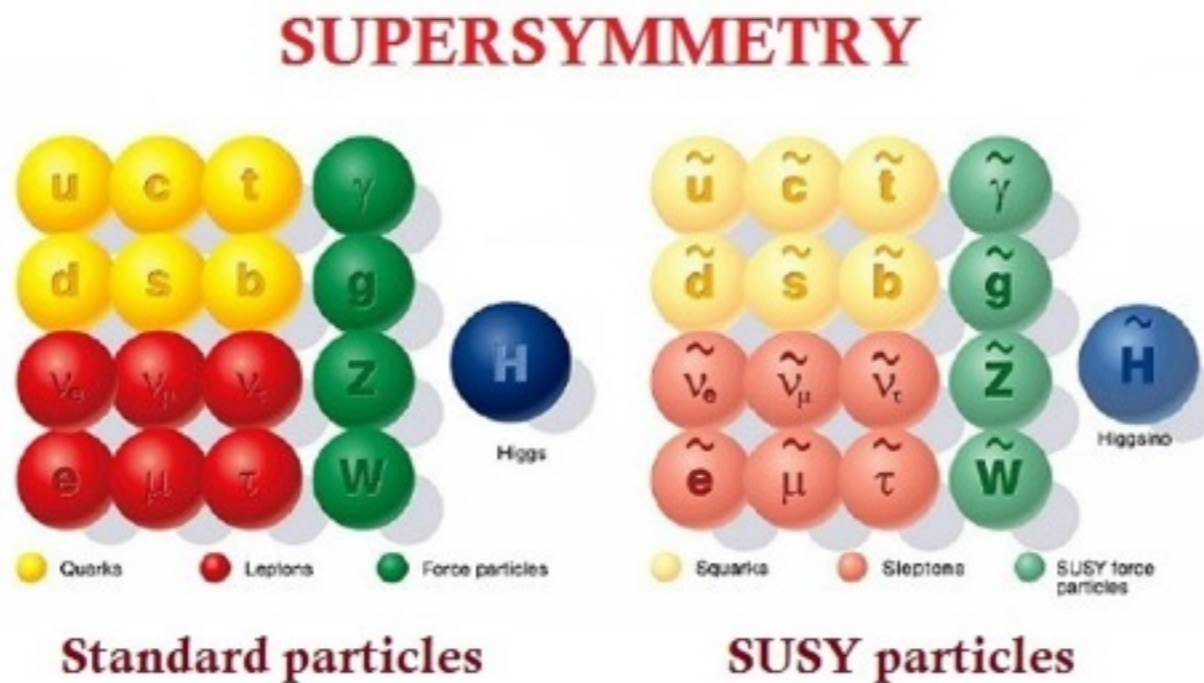


SM is well measured and understood

Standard Model Total Production Cross Section Measurements *Status: July 2014*



SUSY phenomenology



R-parity = $(-1)^{3(B-L)+2s}$

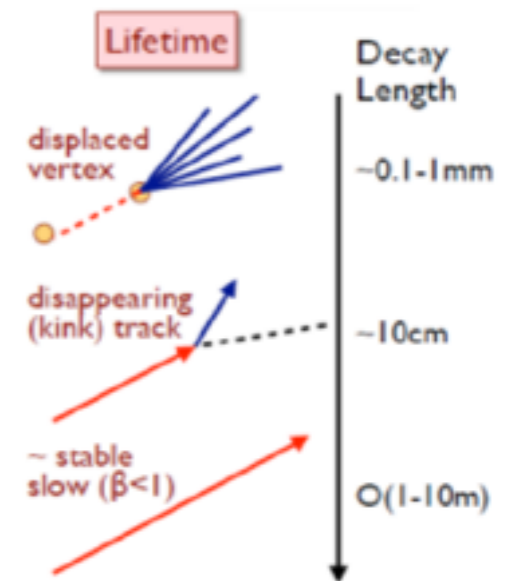
if conserved (RPC)

- SUSY particles produced in pairs
- Lightest Supersymmetric Particle (LSP) - candidate for Dark Matter

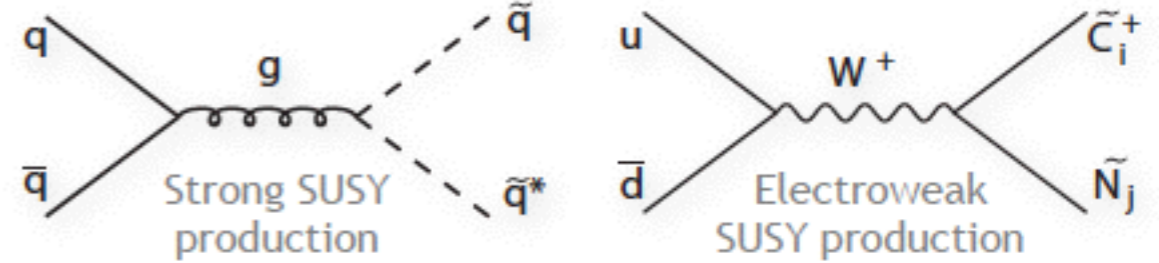
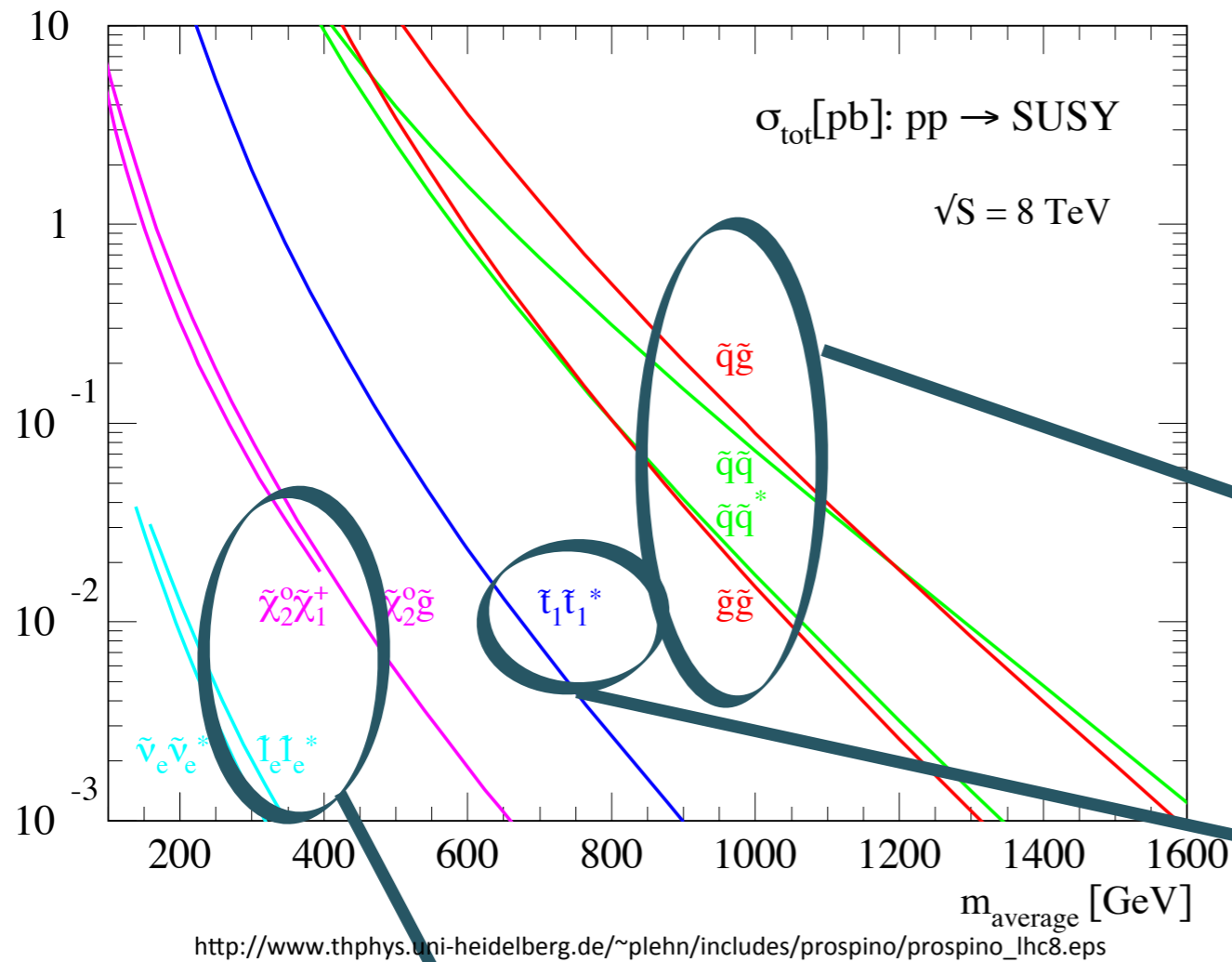
if violated (RPV)

- rich and diverse phenomenology

Prompt or Long Lived (LL)



SUSY Production

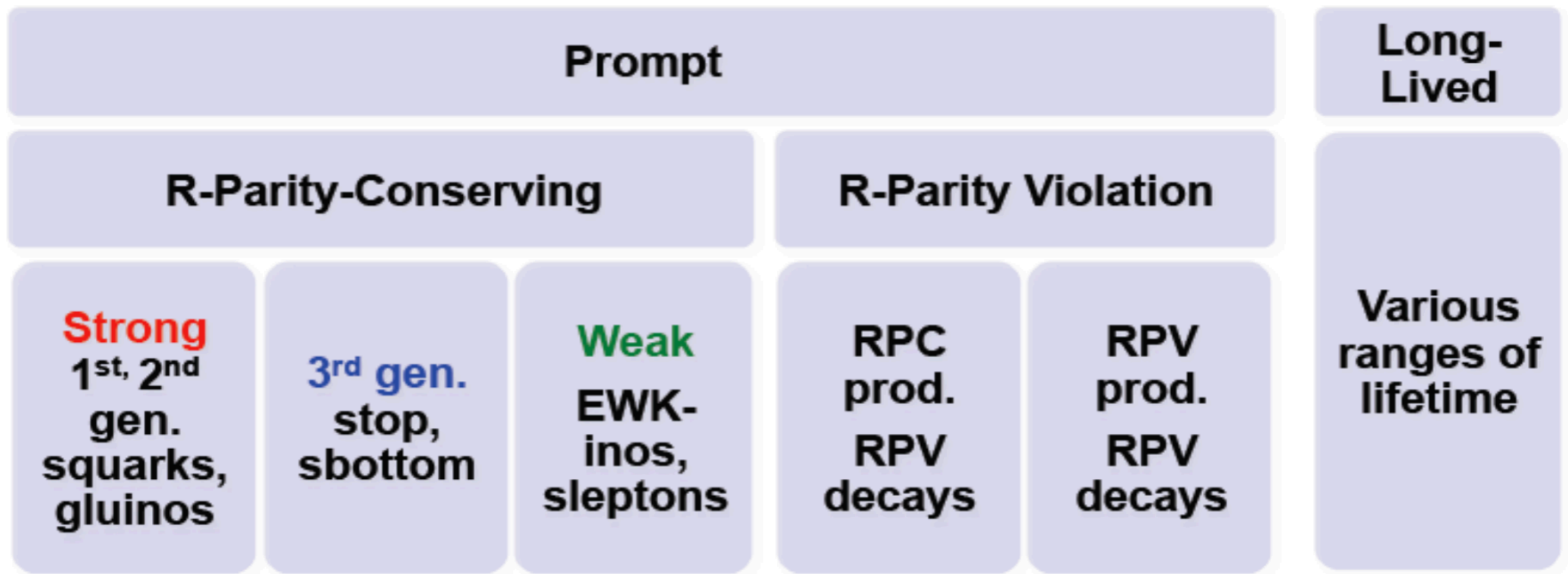


Gluginos and 1st and 2nd generation squarks

3rd generation squarks

Charginos, neutralinos, sleptons
 - small but clean signatures

Strategy designed to cover a large set of models



- Each analysis optimised for several models.

From SM backgrounds to SUSY SRs

Standard Model

Top, multijets
Z, W, WZ, WWZ, Higgs

Reducible

Determined from data
Analysis specific

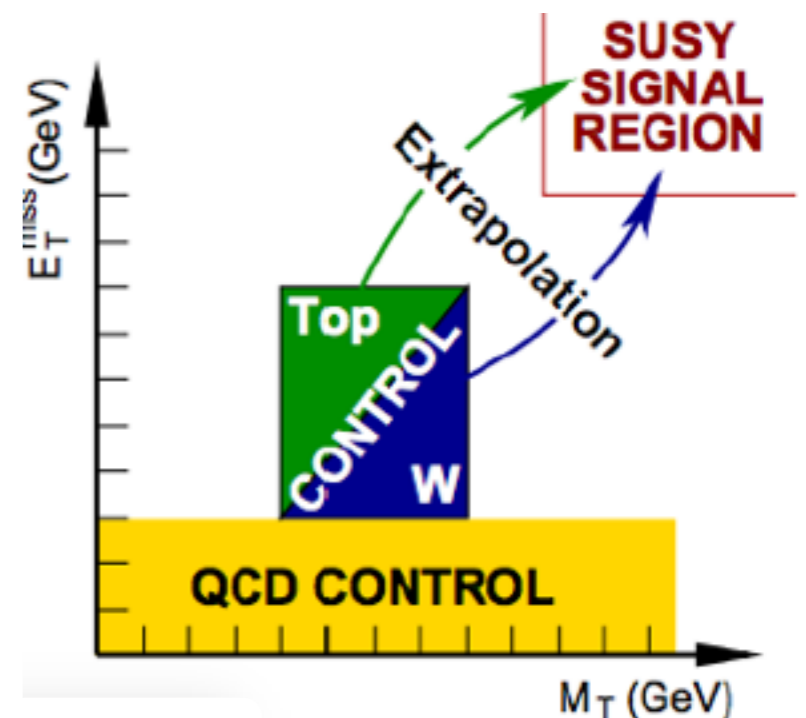
Irreducible

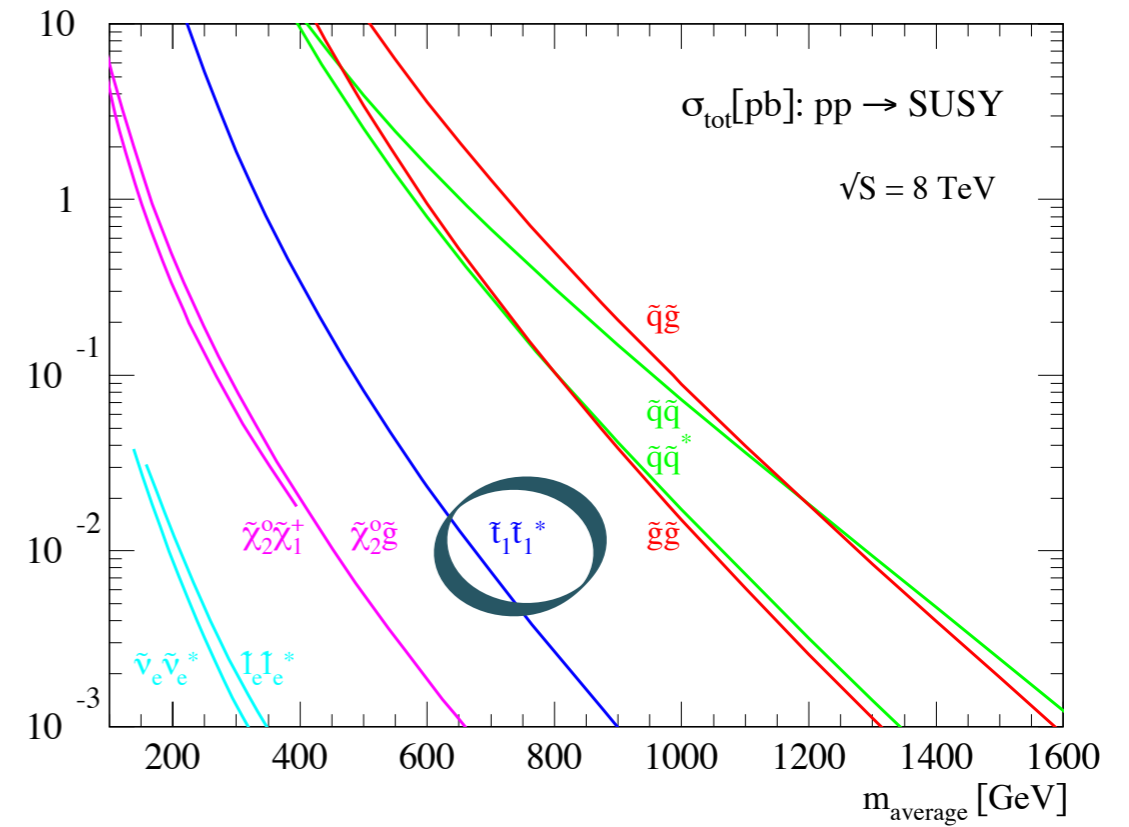
Normalize MC in Control
Regions
Small contributions - rely on MC

Validation

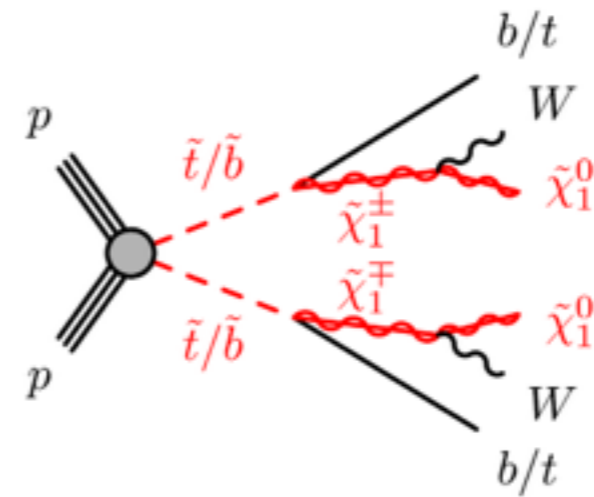
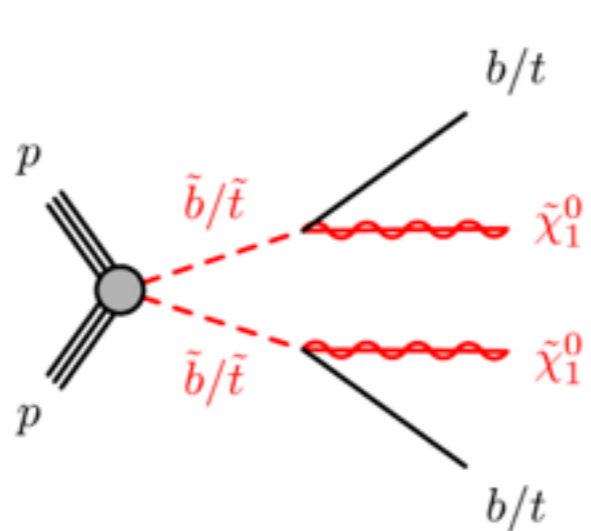
Cross check SM predictions
with Data

Signal

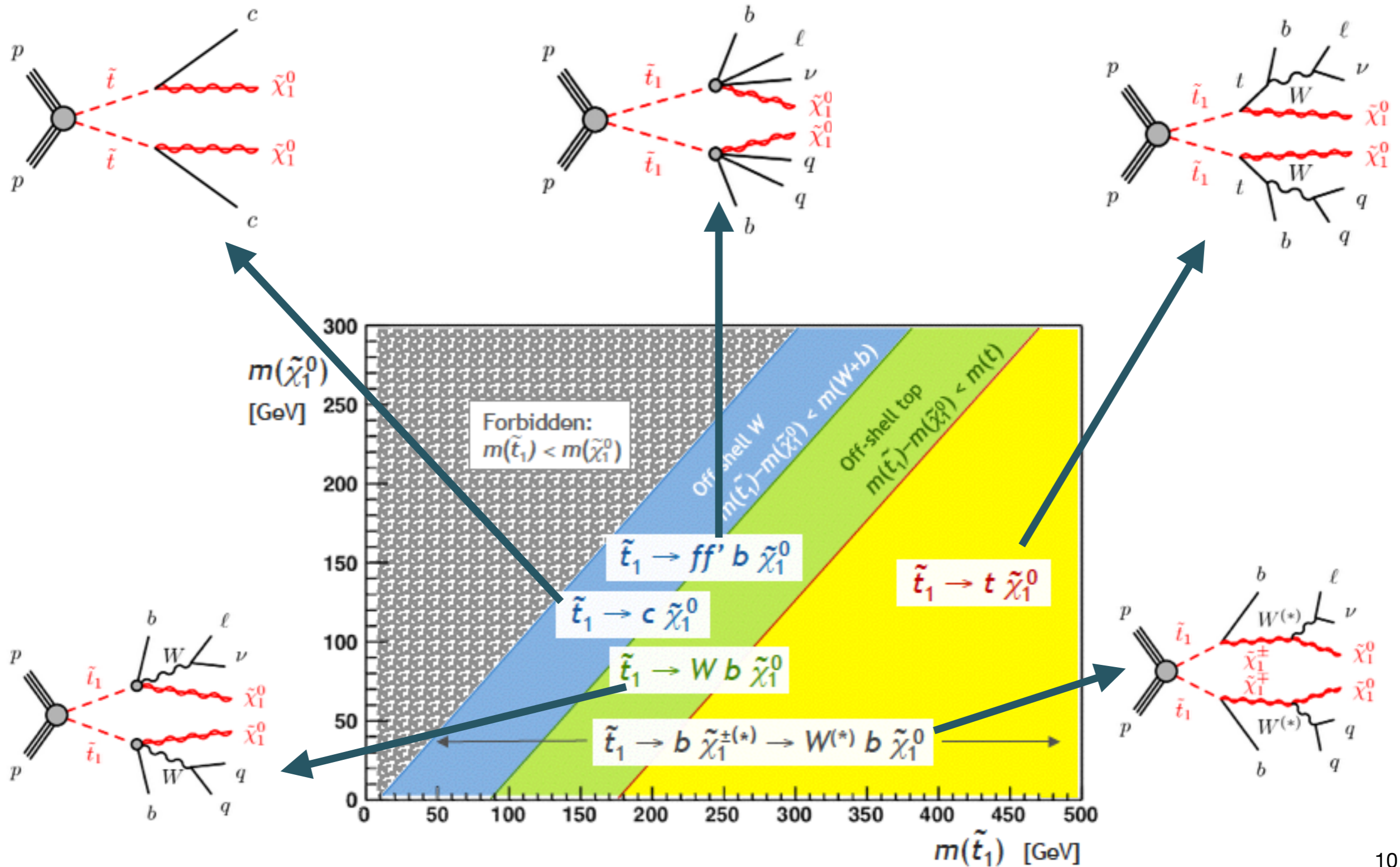




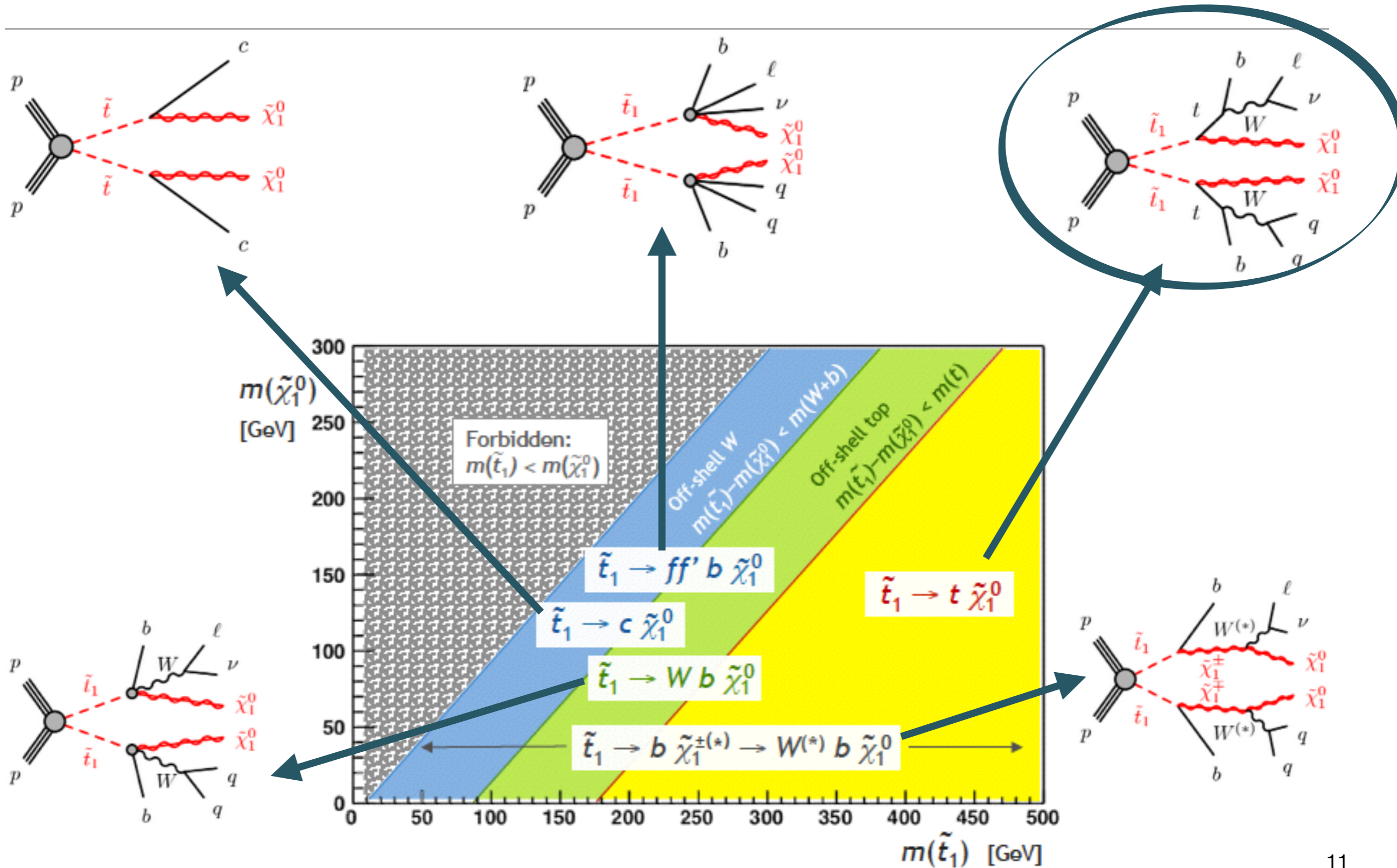
3rd generation squarks:
 stop and sbottom



Stop search strategy

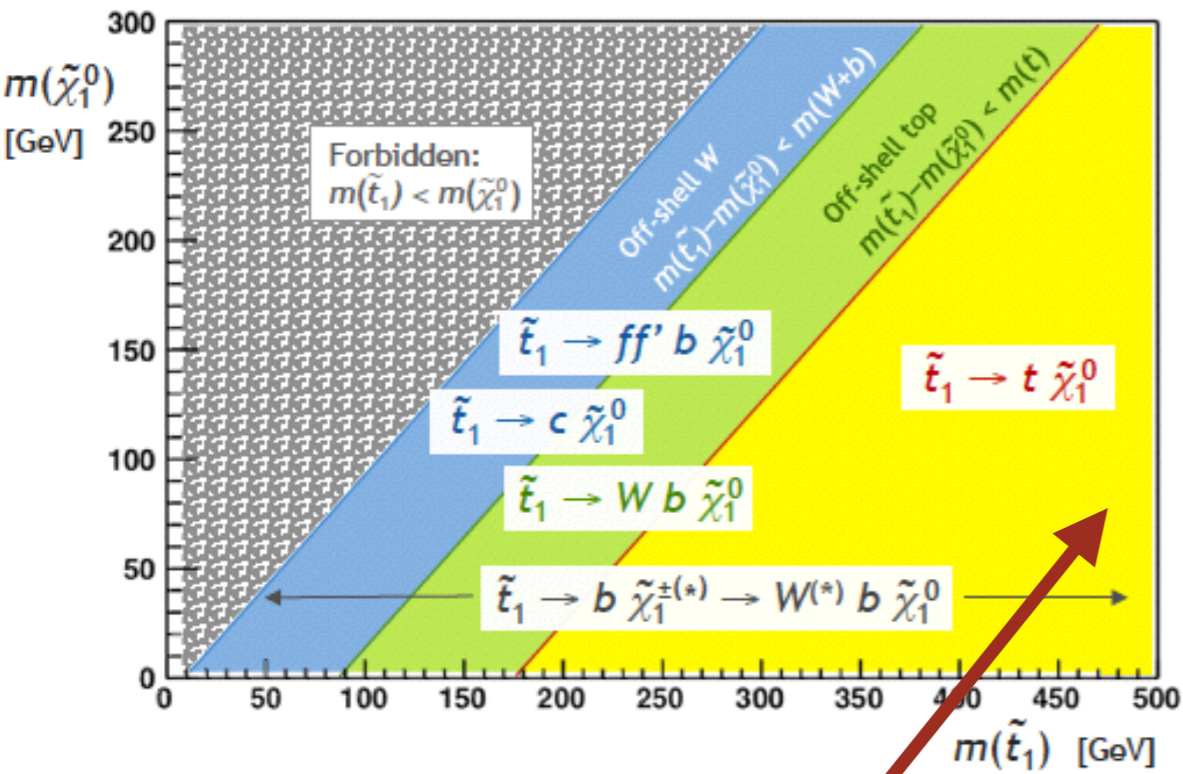
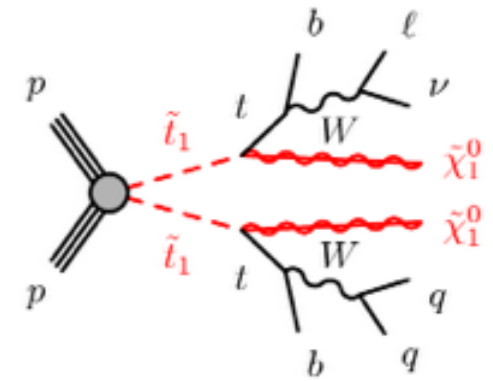


Stop search strategy



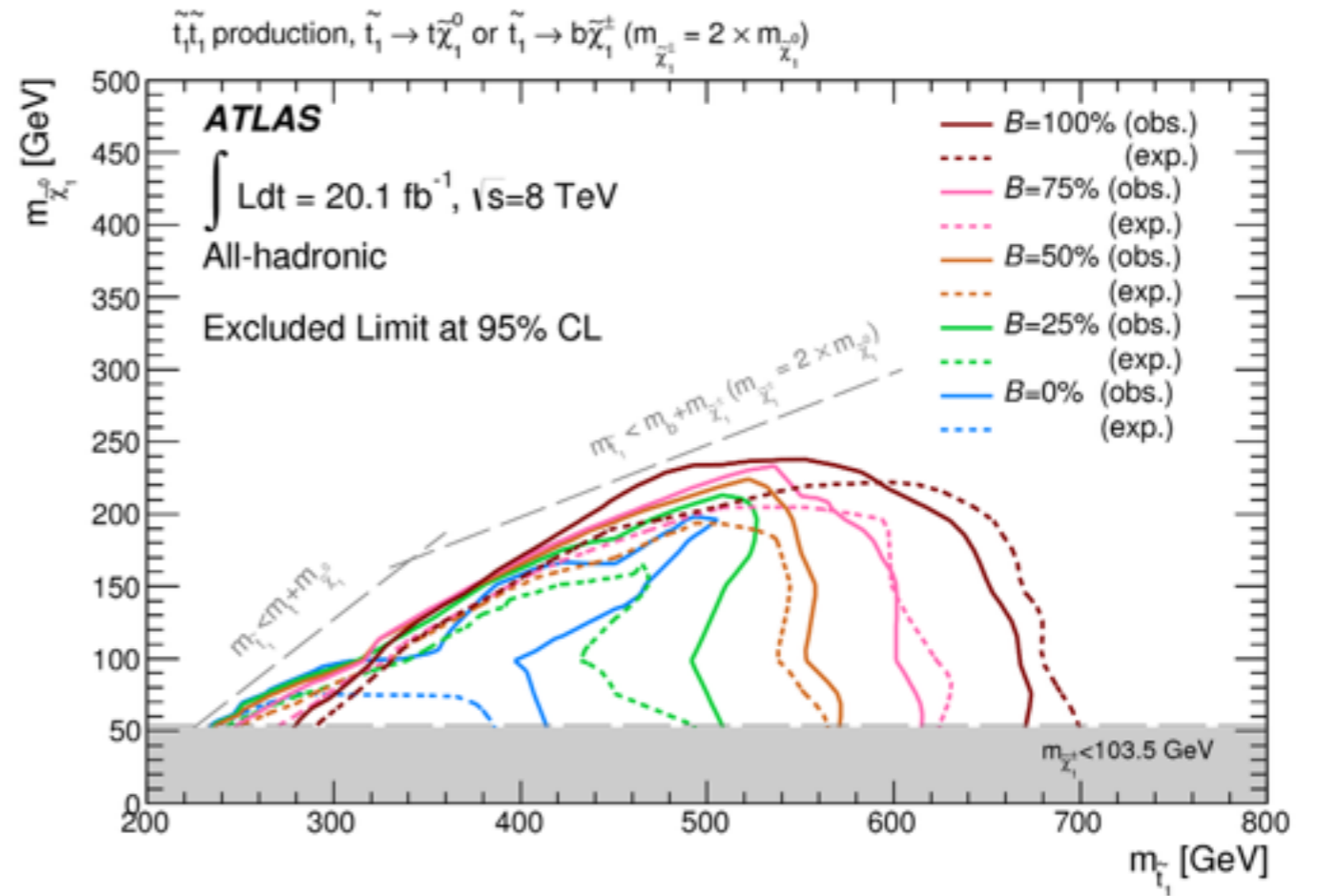
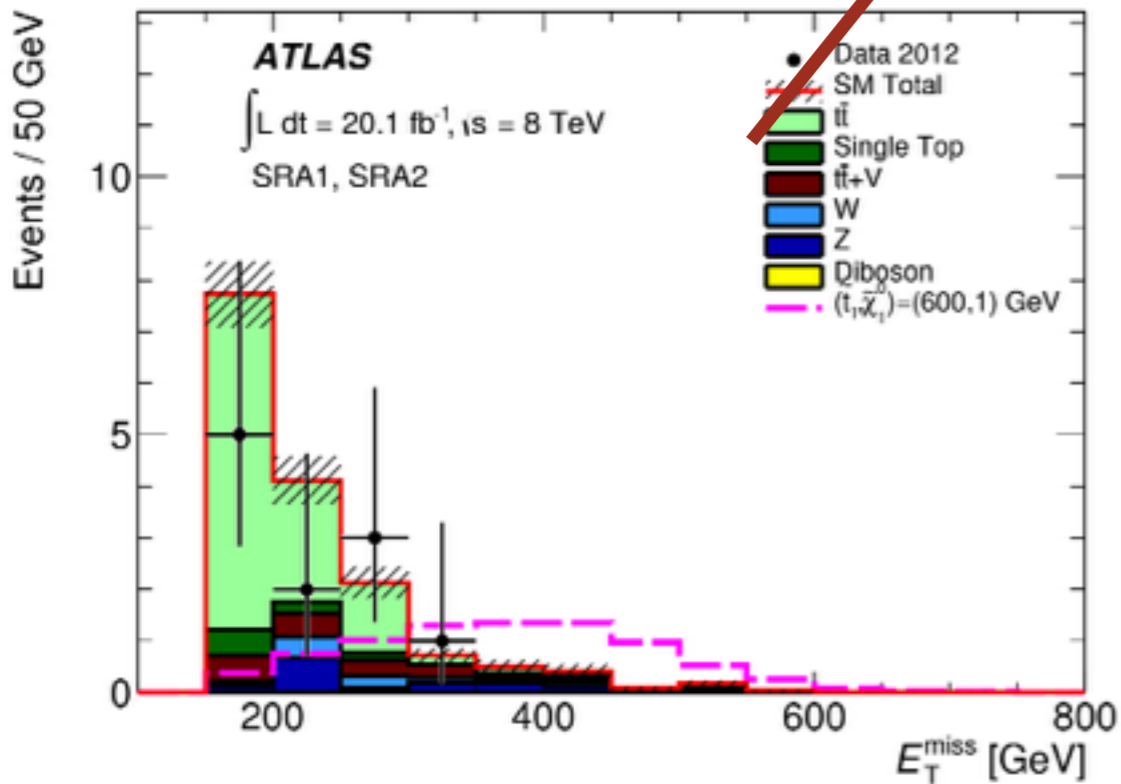
$$t \rightarrow t \chi^0$$

arXiv:1406.1122

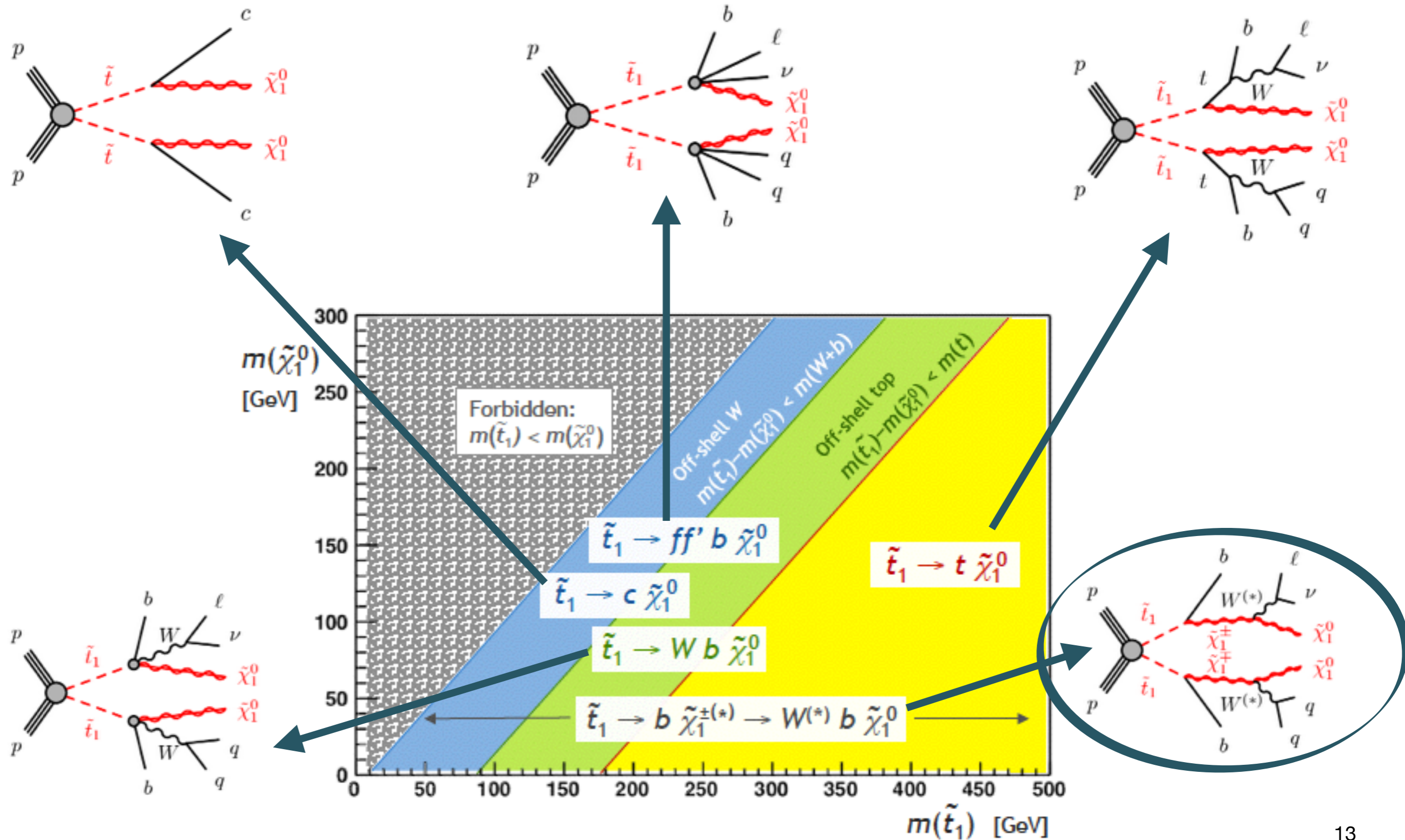


All hadronic final states

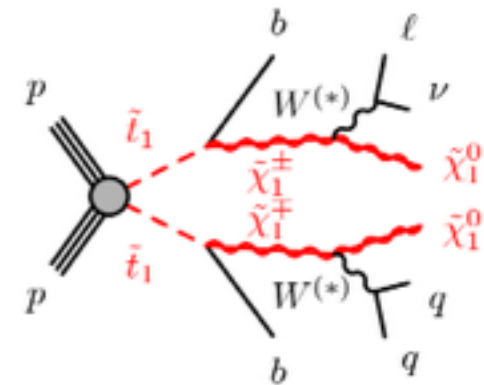
- 6 jet -> fully resolved hadronic tops
- 4/5 jets -> presence of boosted W or top in fat jets
- 5 jets -> chargino sensitive



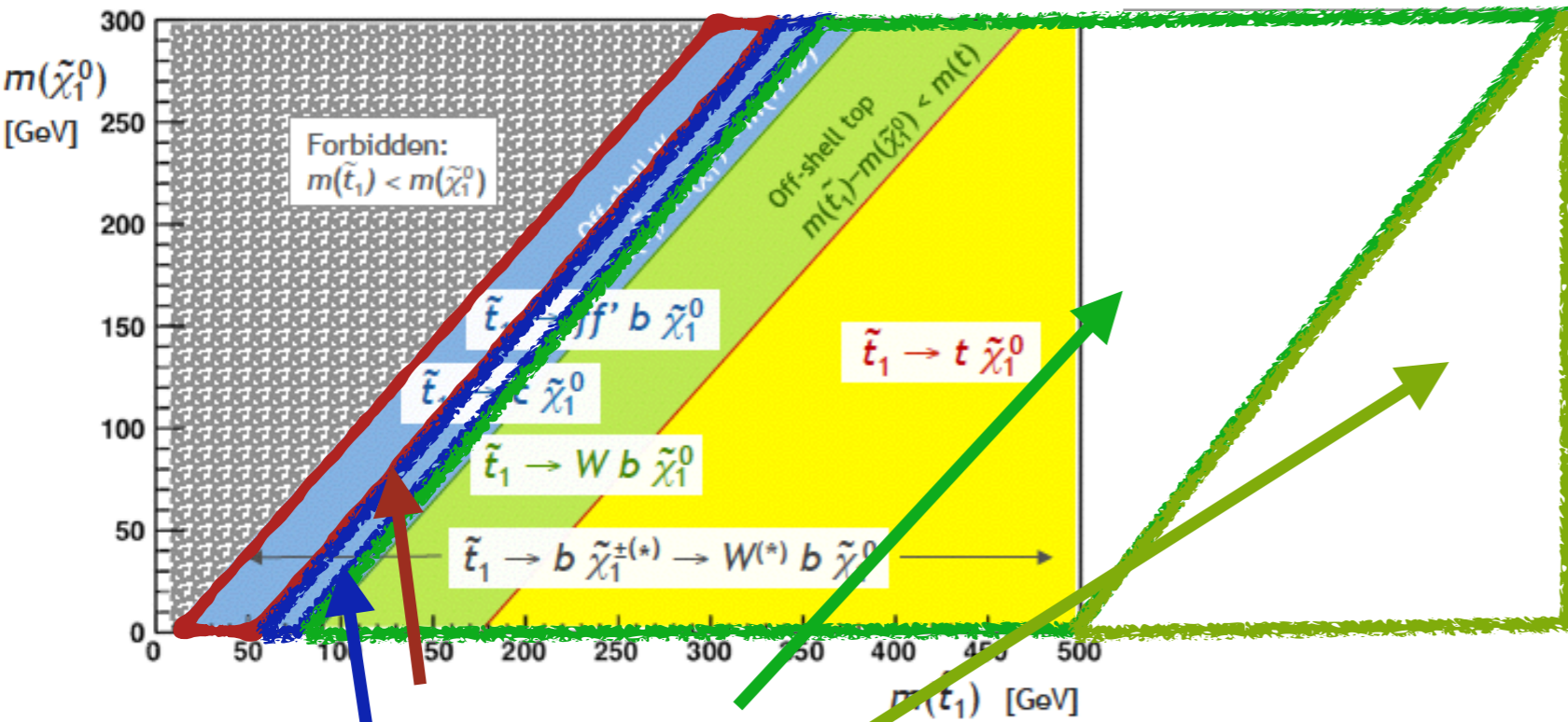
Stop search strategy



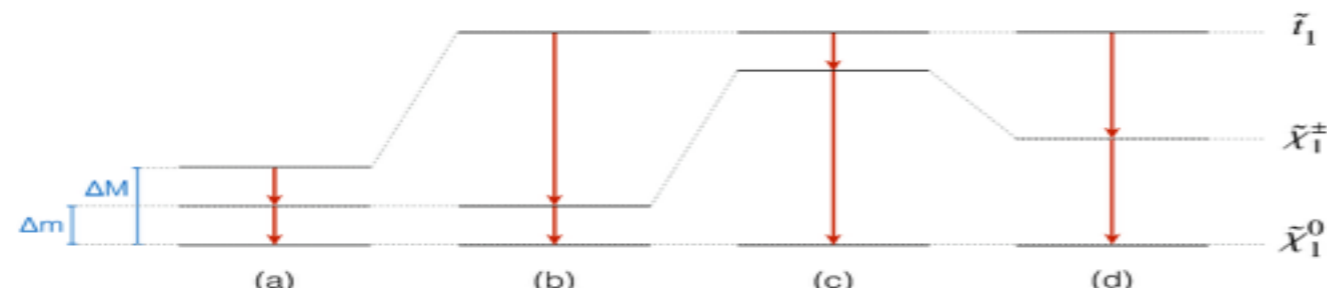
$$t \rightarrow b \chi^\pm$$



arXiv:1407.0583

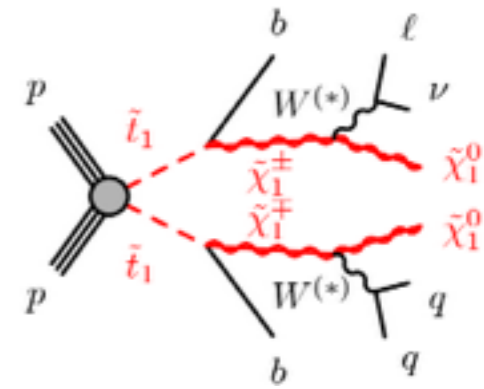


9 SRs defined

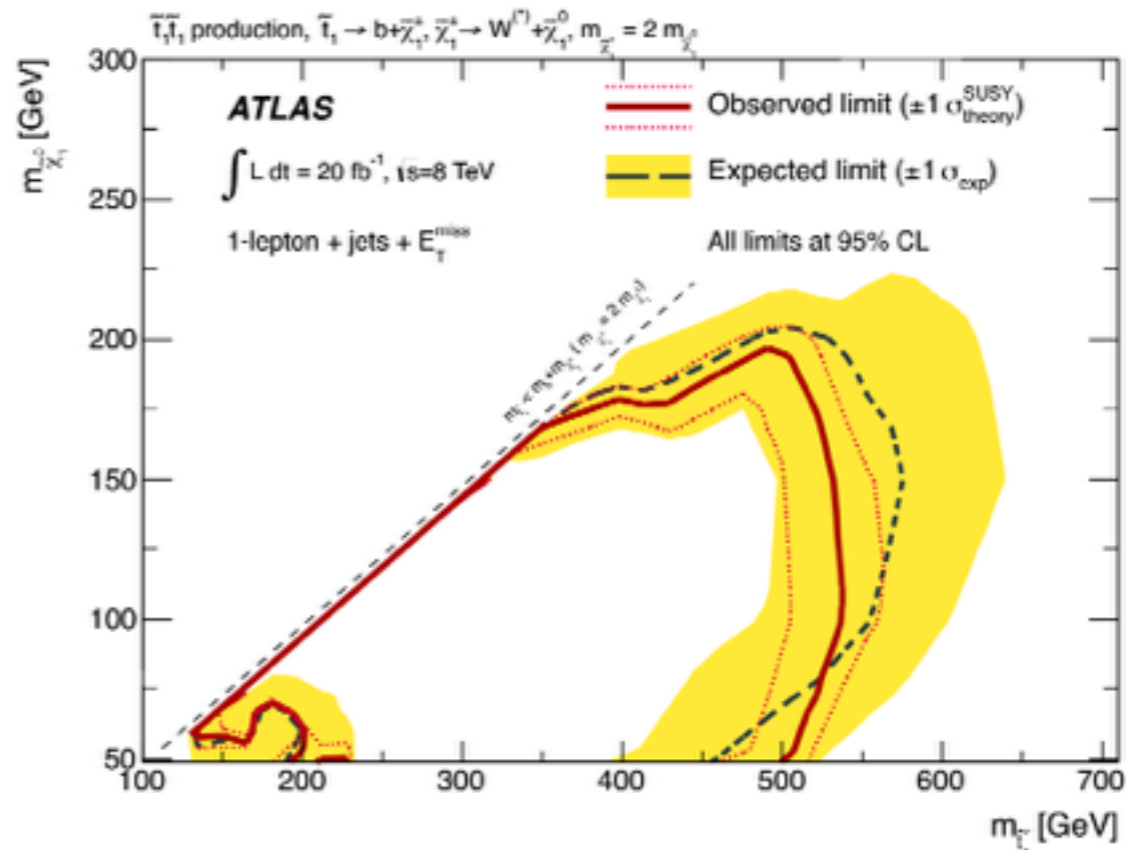
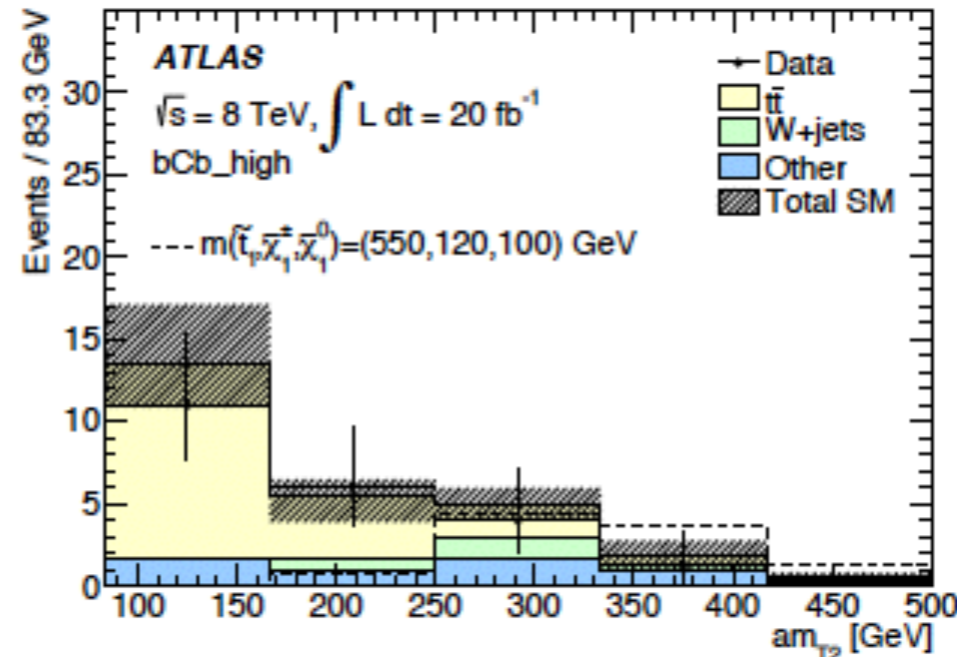
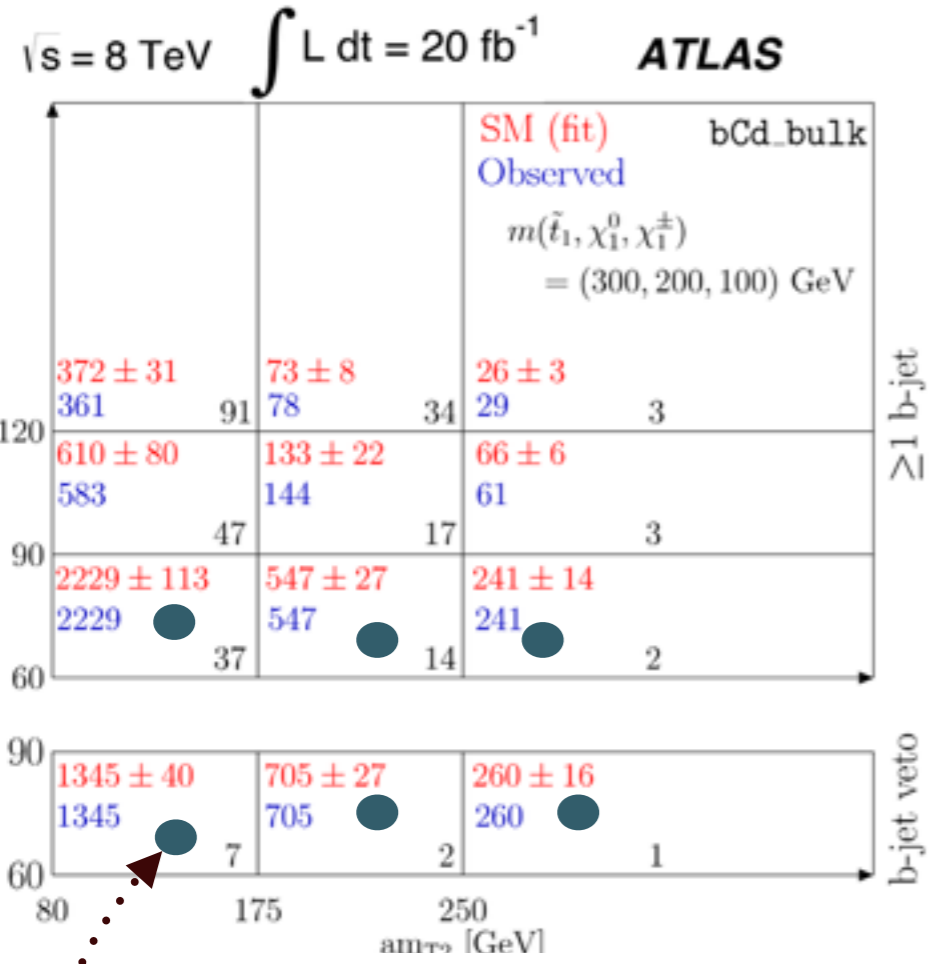


lepton	1 soft	1 soft	1	1
b-jets	subleading	2	veto	1(2)
jets	2(3)	4	3	4
ISR Jet	leading not b-tagged		1	

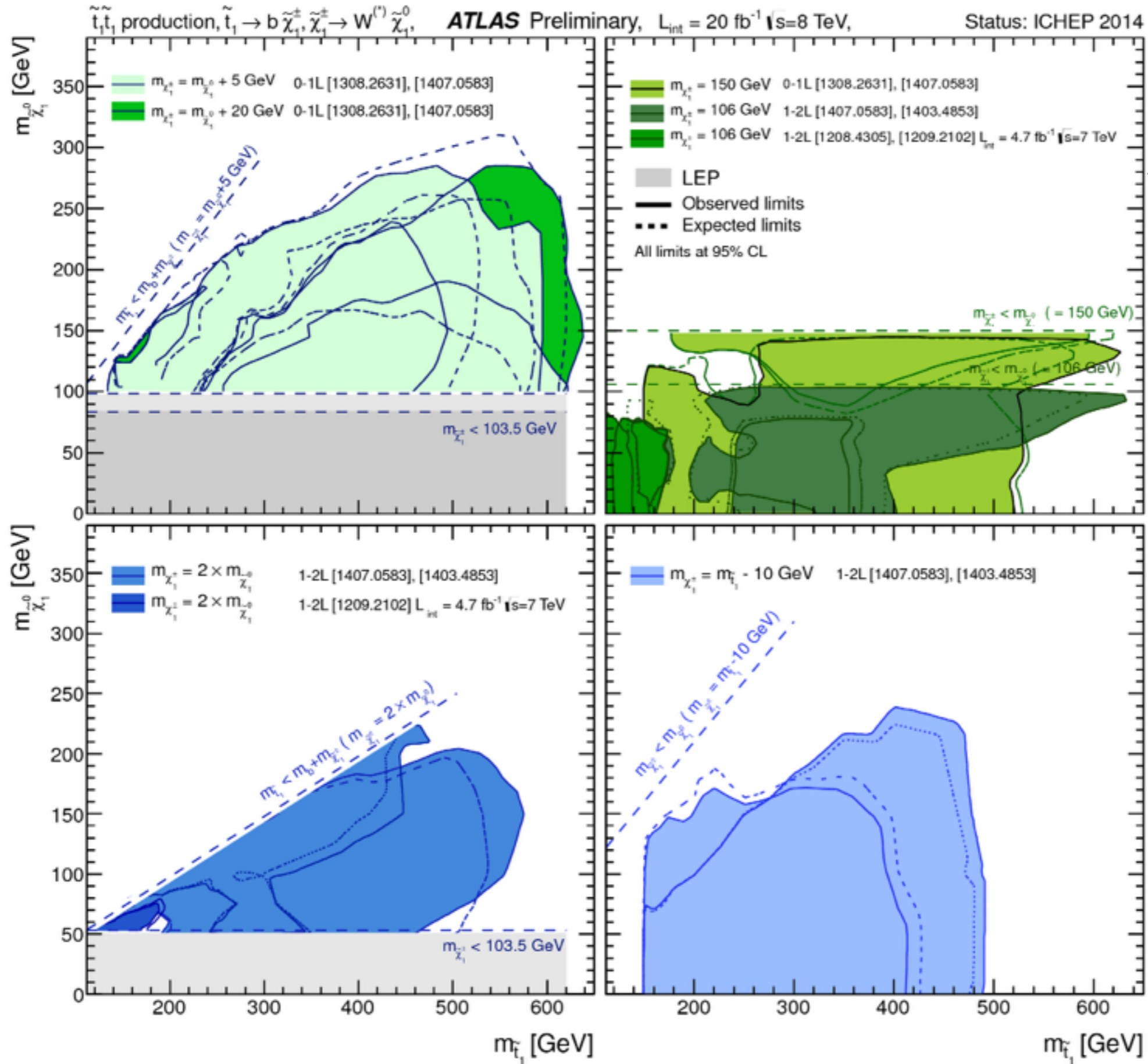
Results



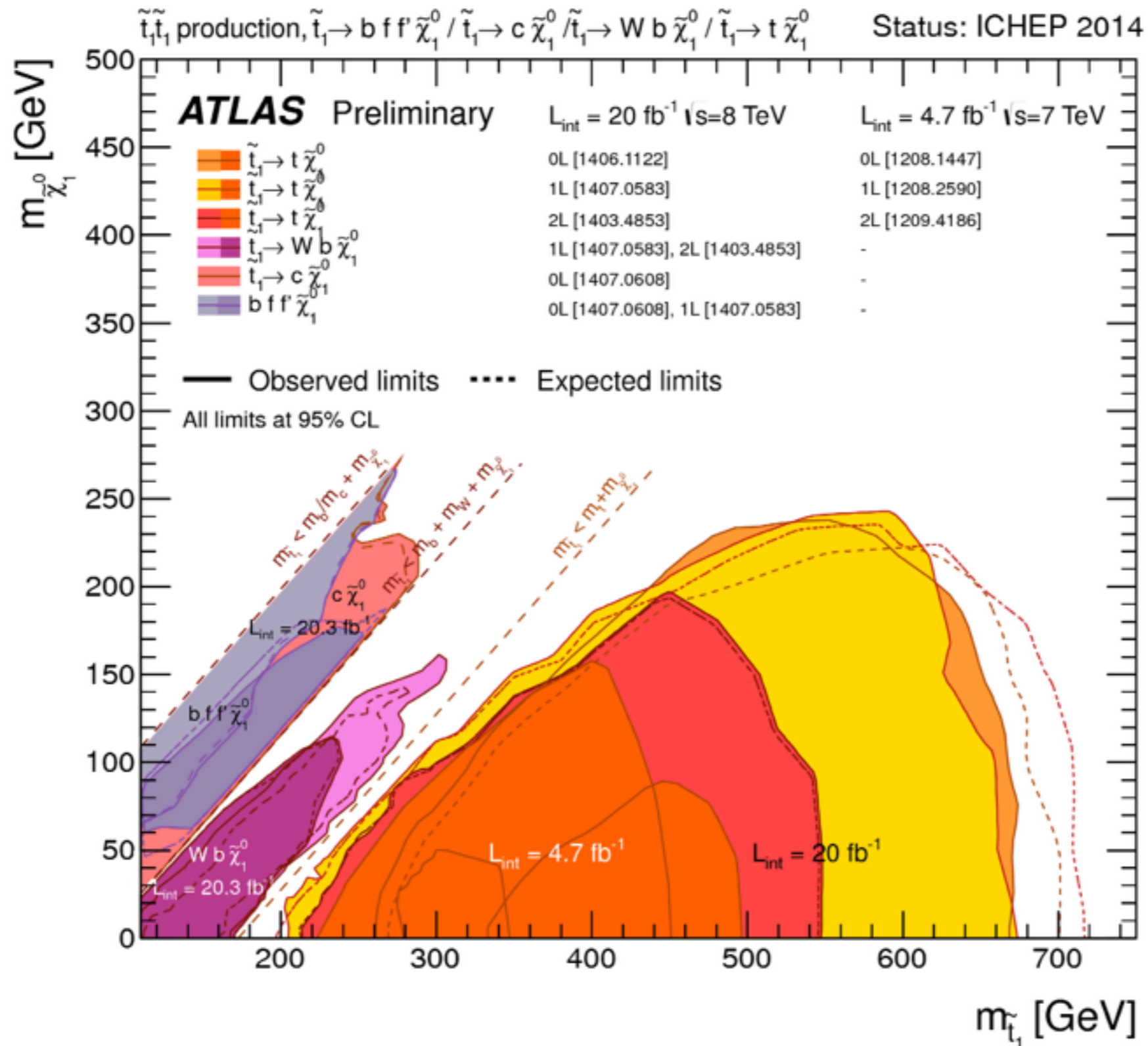
arXiv:1407.0583



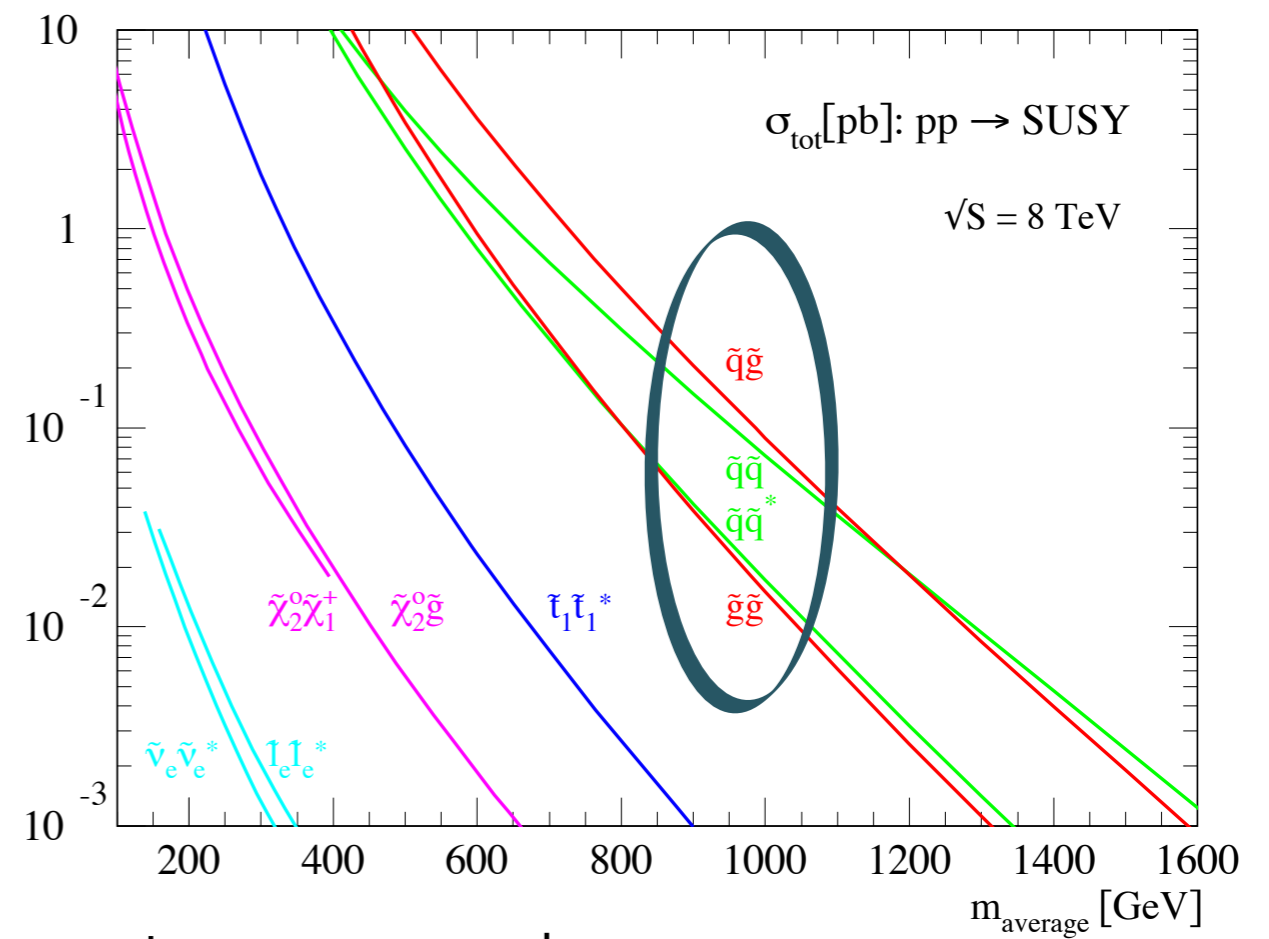
Shape fit in 2 variables
Constrains the fit



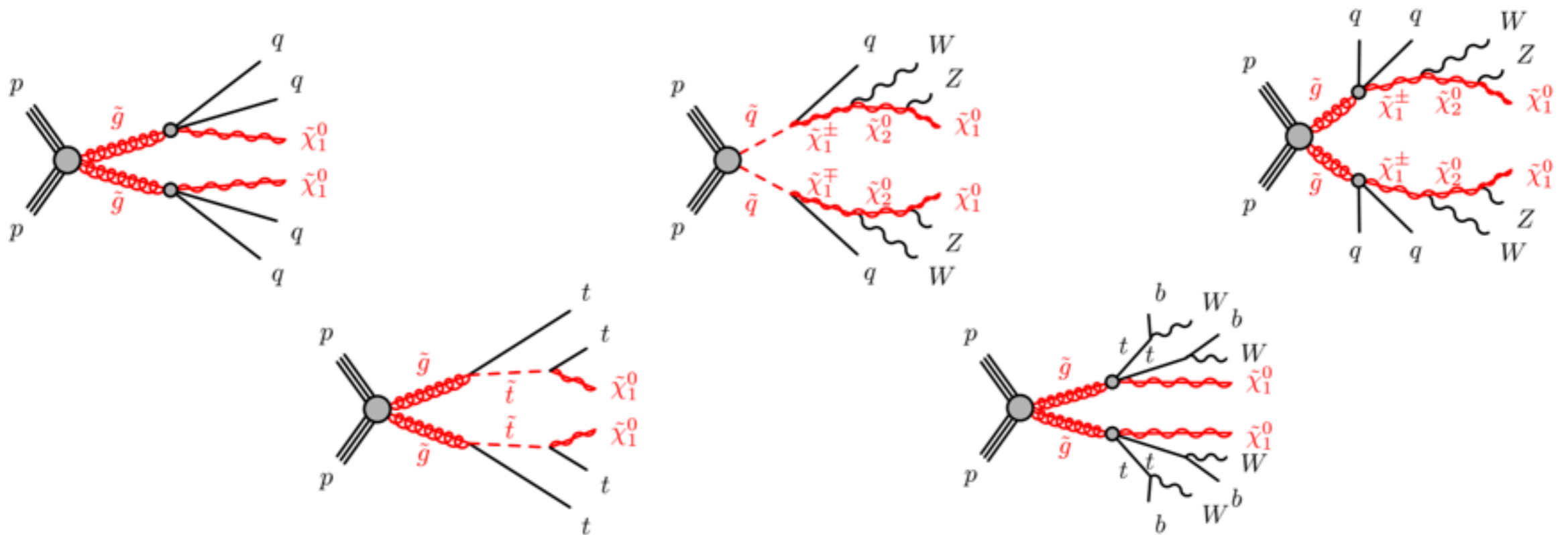
Summary of stop searches



Detailed info



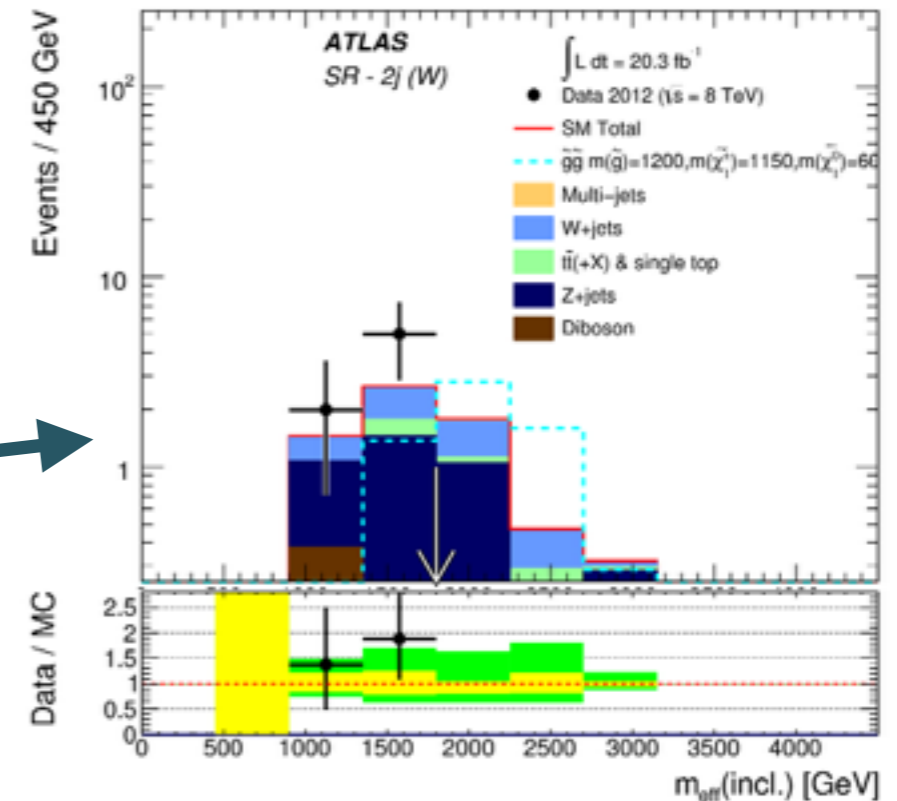
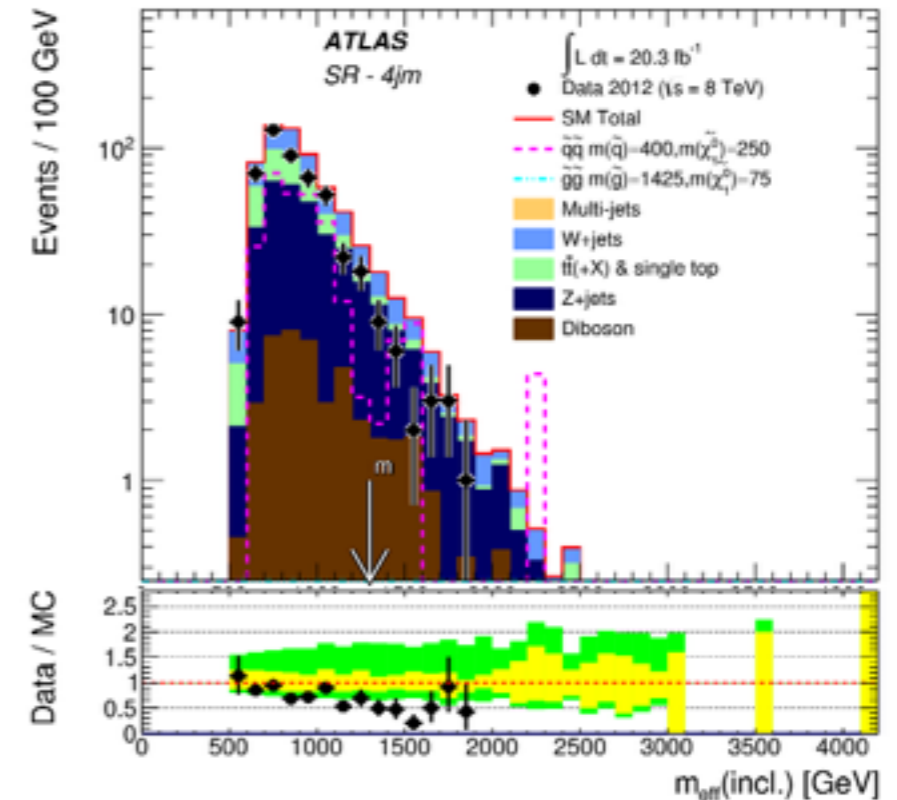
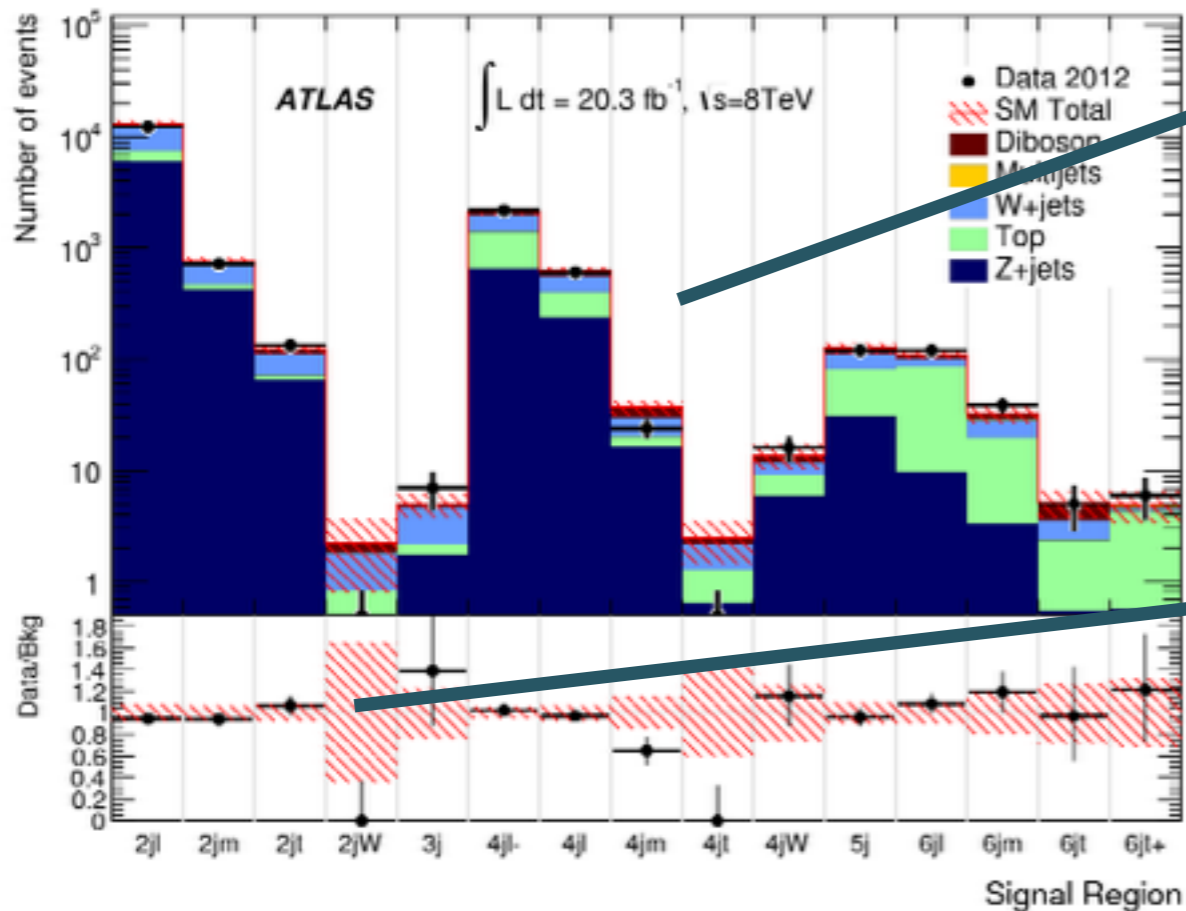
Inclusive strong production 1st and 2nd generations



arXiv:1405.7875

Inclusive no leptons

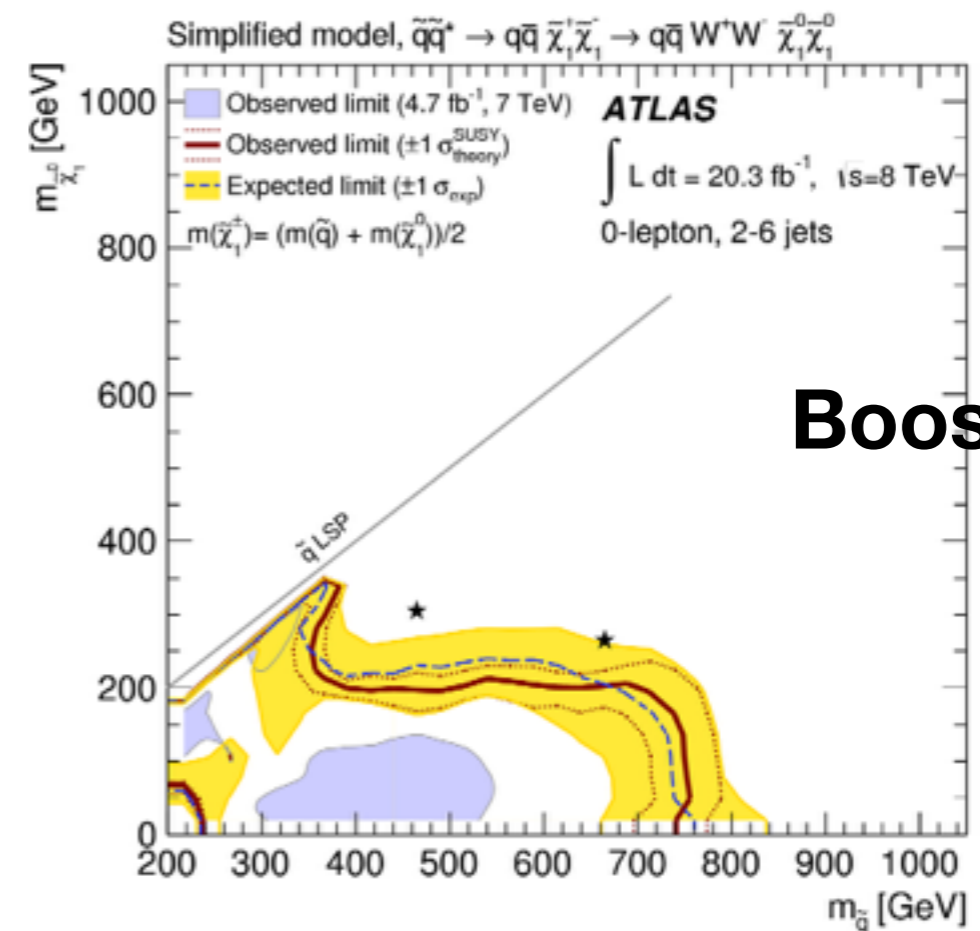
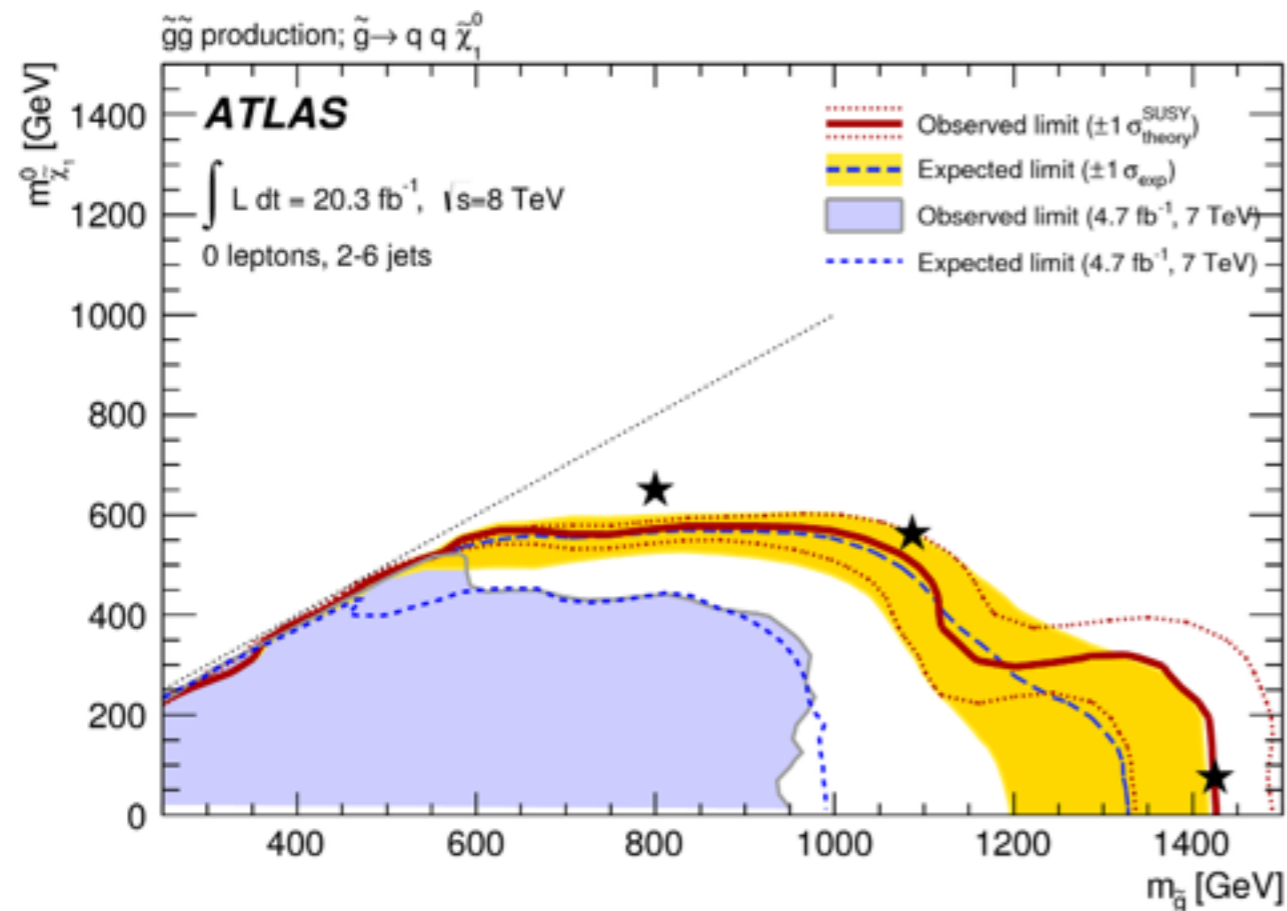
- 15 SRs defined on:
 - Jet multiplicity (2 to 6)
 - $M_{\text{eff}} = E_T^{\text{Miss}} + \sum p_{T\text{-jets}}$ (0.8 to 2.2 TeV thresholds)
 - Boosted objects $W \rightarrow qq'$ unresolved jet mass 60-100 GeV



arXiv:1405.7875

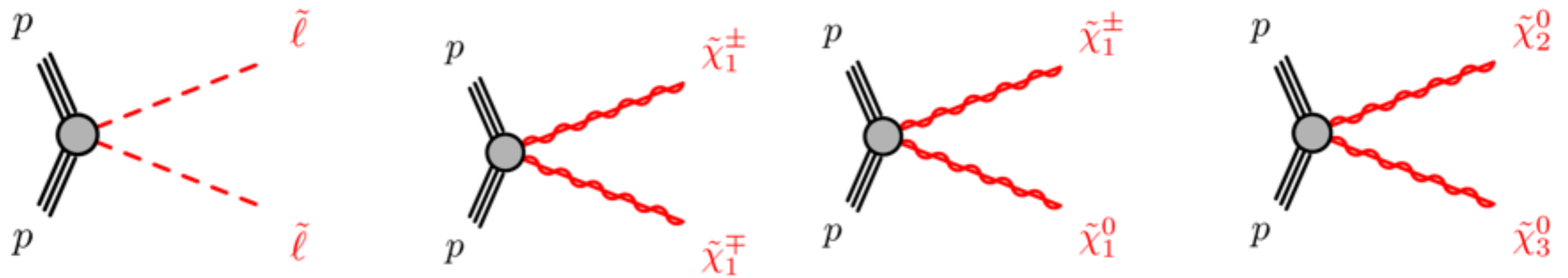
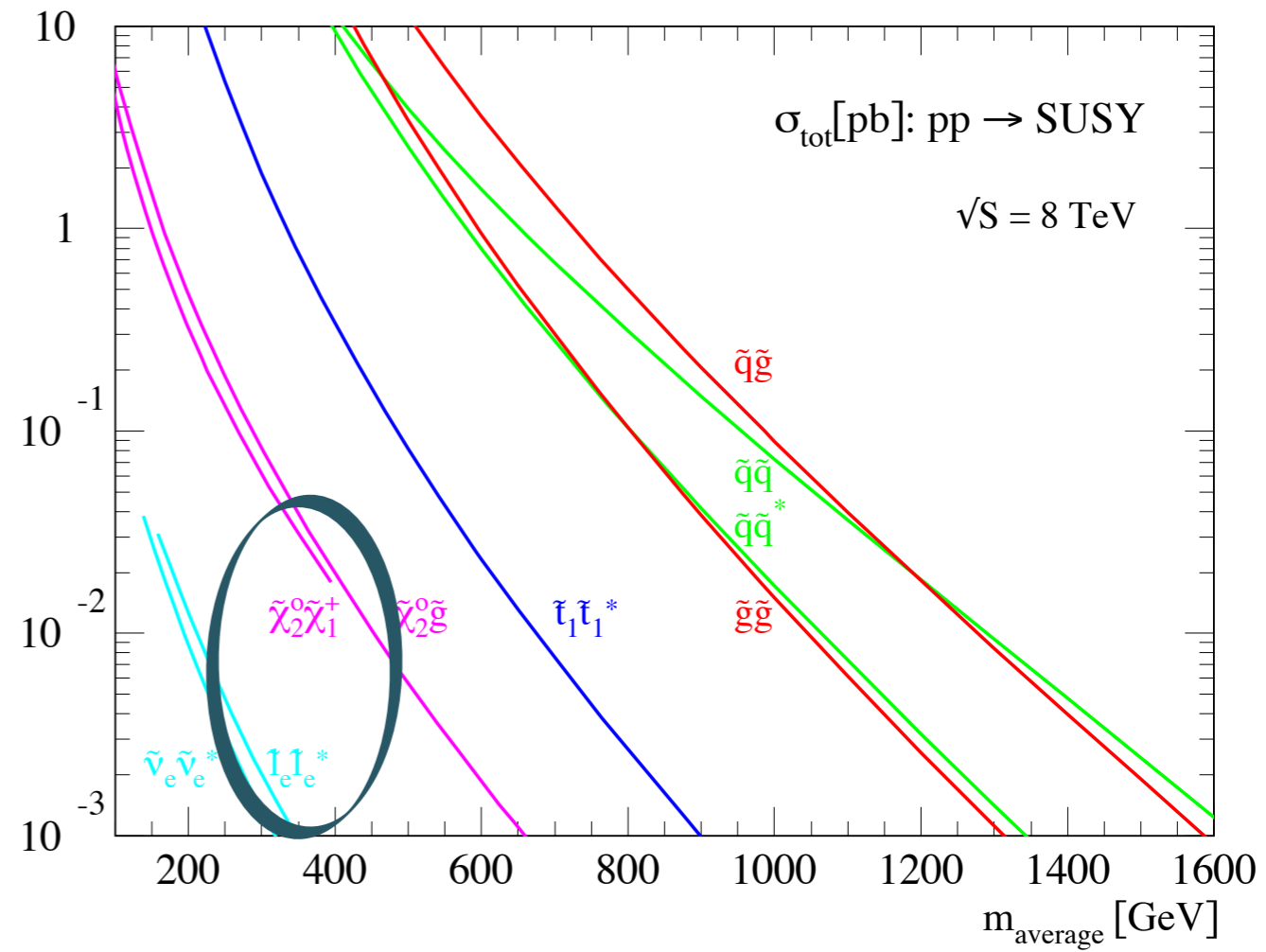
Inclusive no leptons

- No excess over SM background seen
- Limits set for pair gluino and squark production

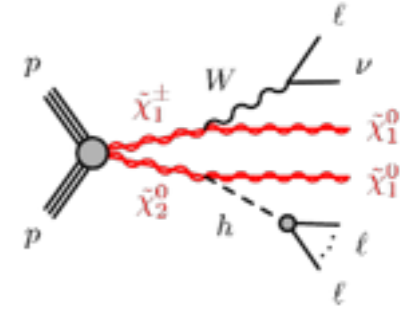
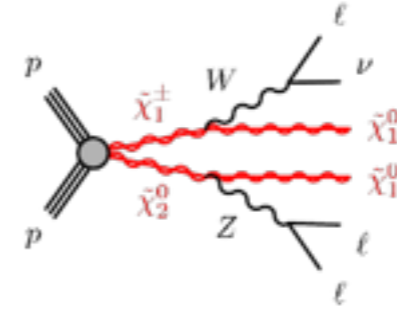
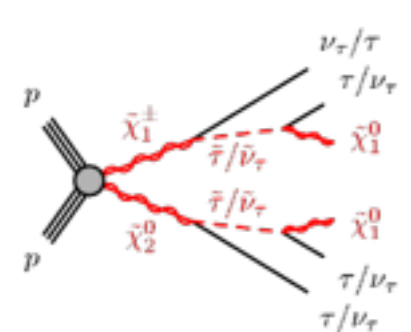
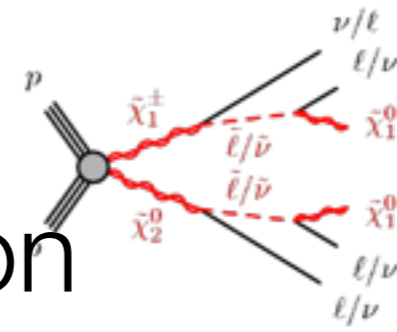


Boosted W

EWK production

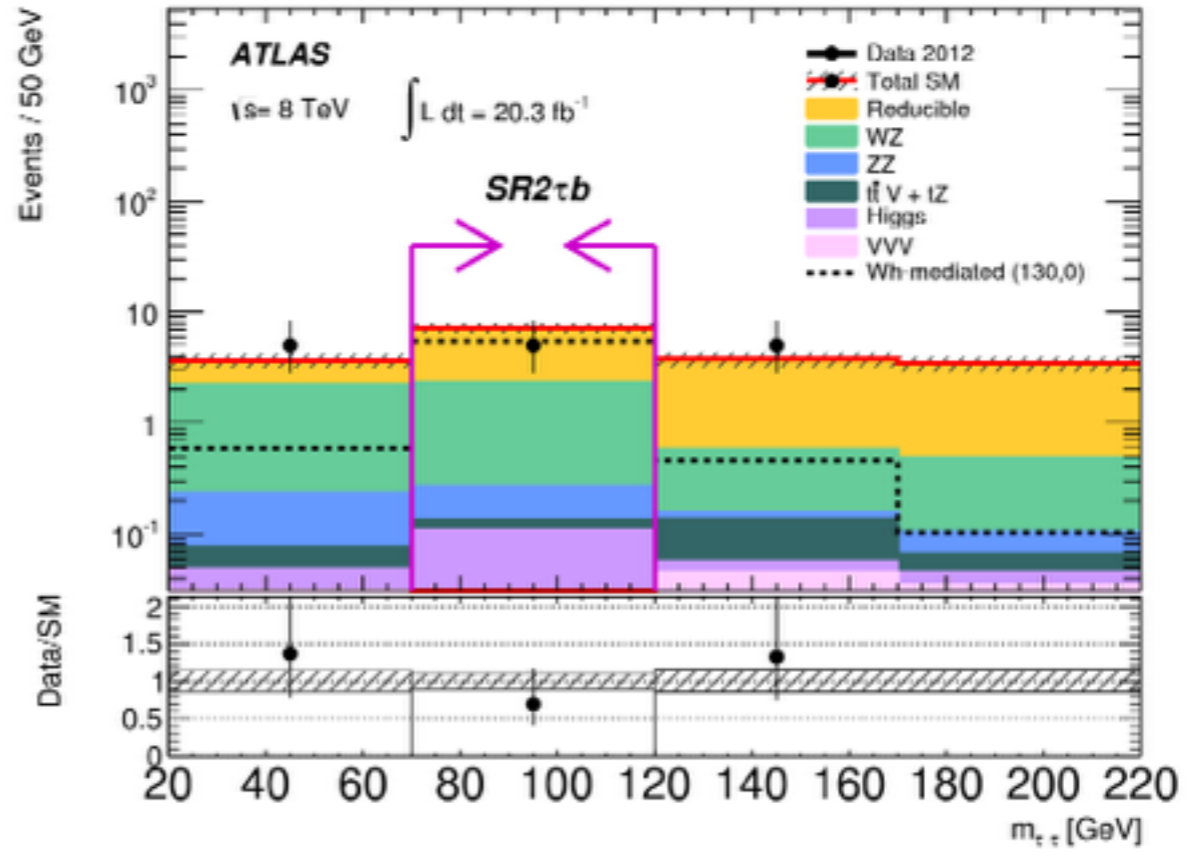
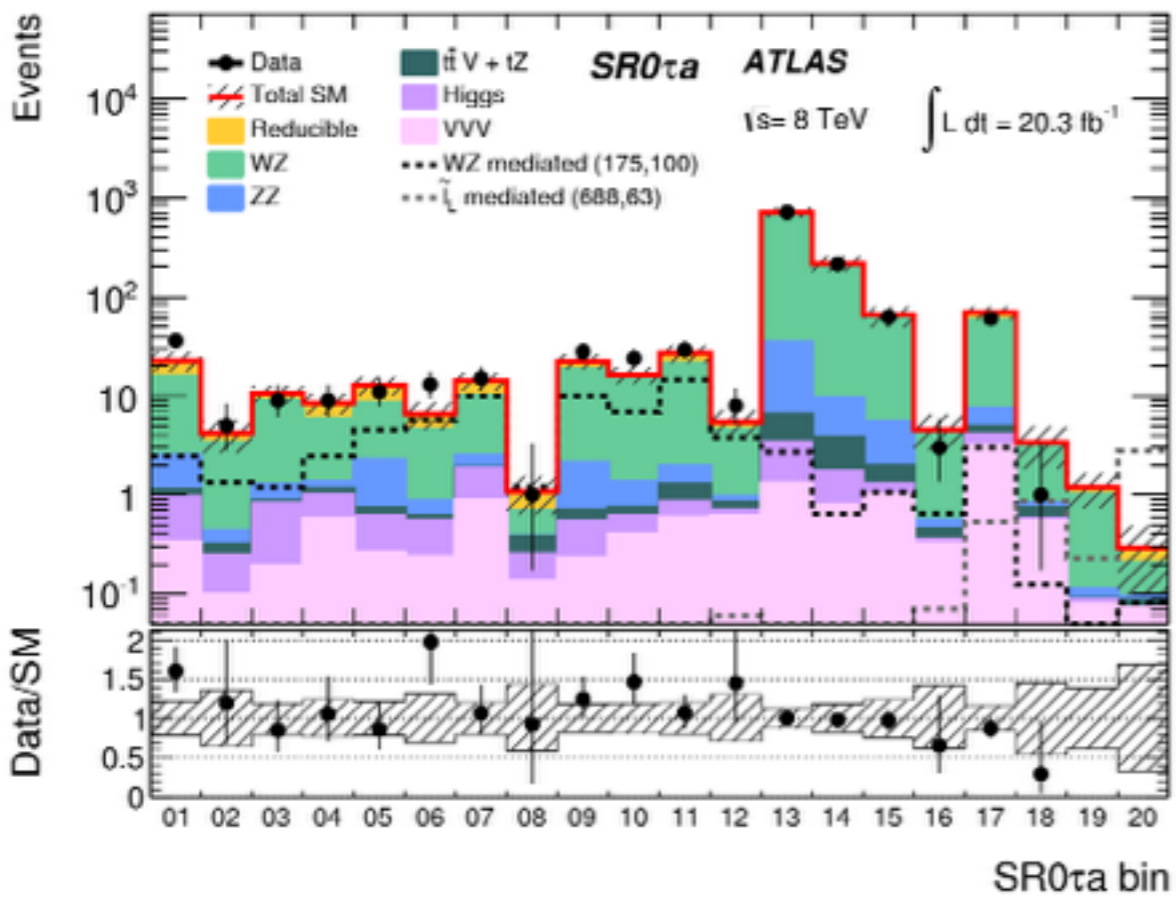


Chargino-neutralino pair production

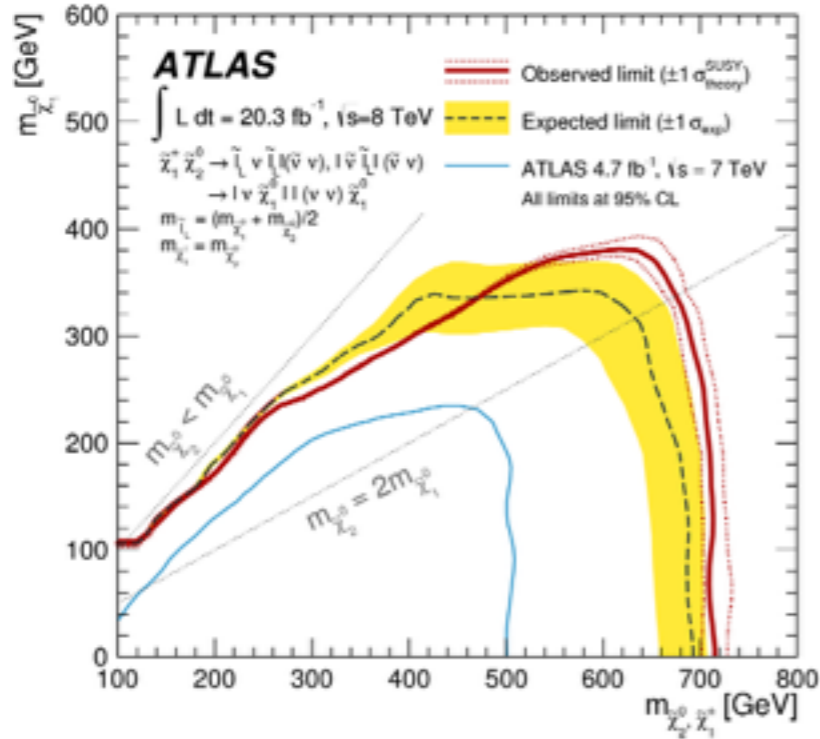
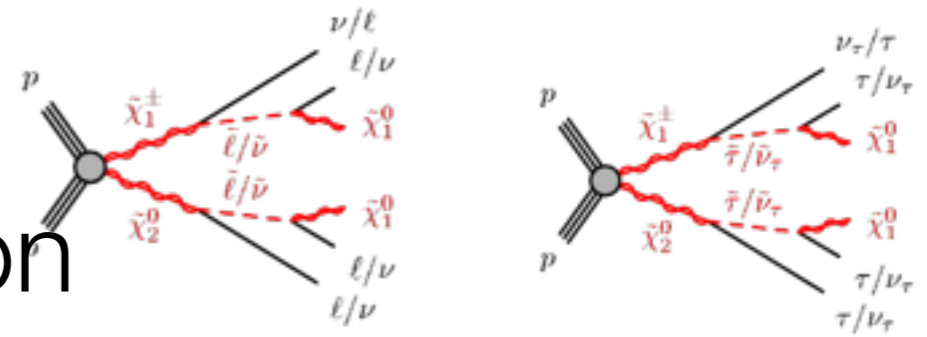


Signal region	SR0τa	SR0τb	SR1τ	SR2τa	SR2τb
Flavour/sign	l^+l^-l, l^+l^-l'	$l^\pm l^\pm l' \mp$	$\tau^\pm l \mp l' \mp, \tau^\pm l \mp l' \mp$	$\tau\tau l$	$\tau^+\tau^-l$
b-tagged jet	veto	veto	veto	veto	veto
E_T^{miss}	binned	> 50	> 50	> 50	> 60
Other	m_{SFOS} binned m_T binned	$p_T^{3\text{rd } \ell} > 20$ $\Delta\phi_{\ell\ell'}^{\text{min}} \leq 1.0$	$p_T^{2\text{nd } \ell} > 30$ $\sum p_T^\ell > 70$ $m_{\ell\tau} < 120$ $m_{ee} Z$ veto	$m_{T2}^{\text{max}} > 100$	$\sum p_T^\tau > 110$ $70 < m_{\tau\tau} < 120$
Target model	$\tilde{\ell}, WZ$ -mediated	Wh -mediated	Wh -mediated	$\tilde{\tau}_L$ -mediated	Wh -mediated

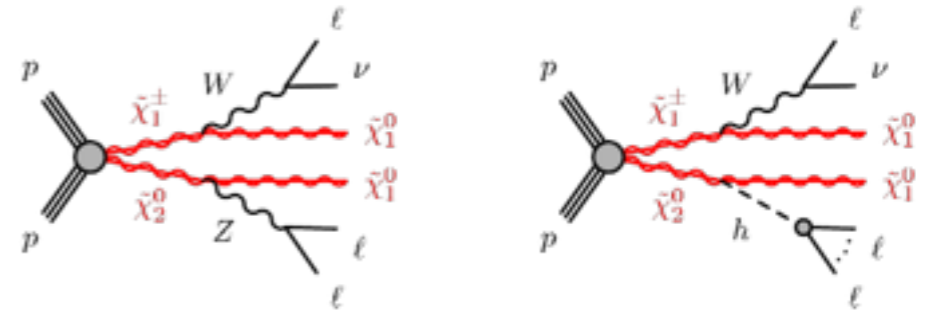
arXiv:1402.7029



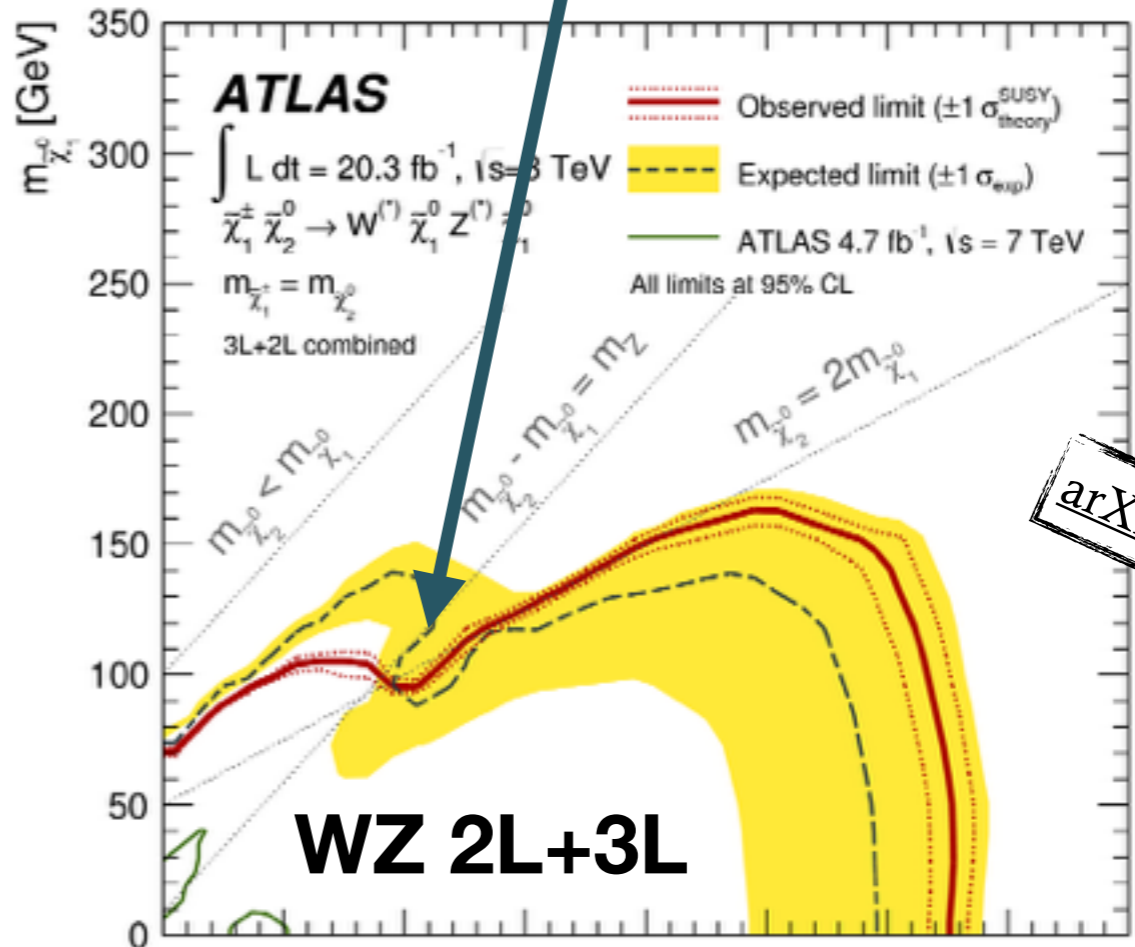
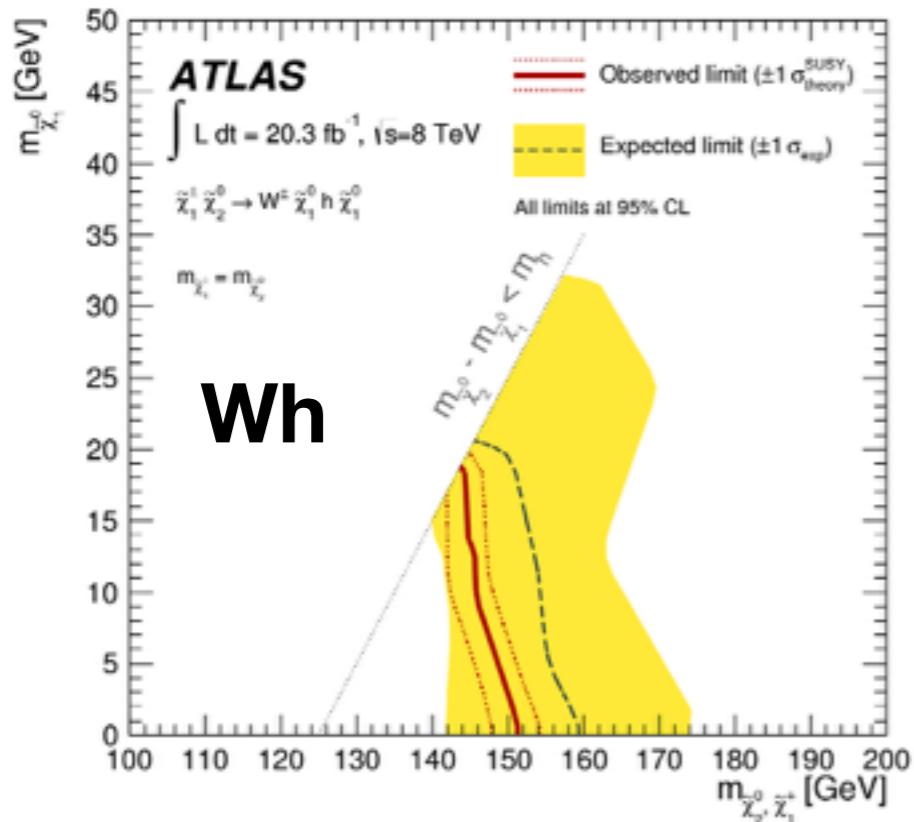
Chargino-neutralino pair production



arXiv:1402.7029

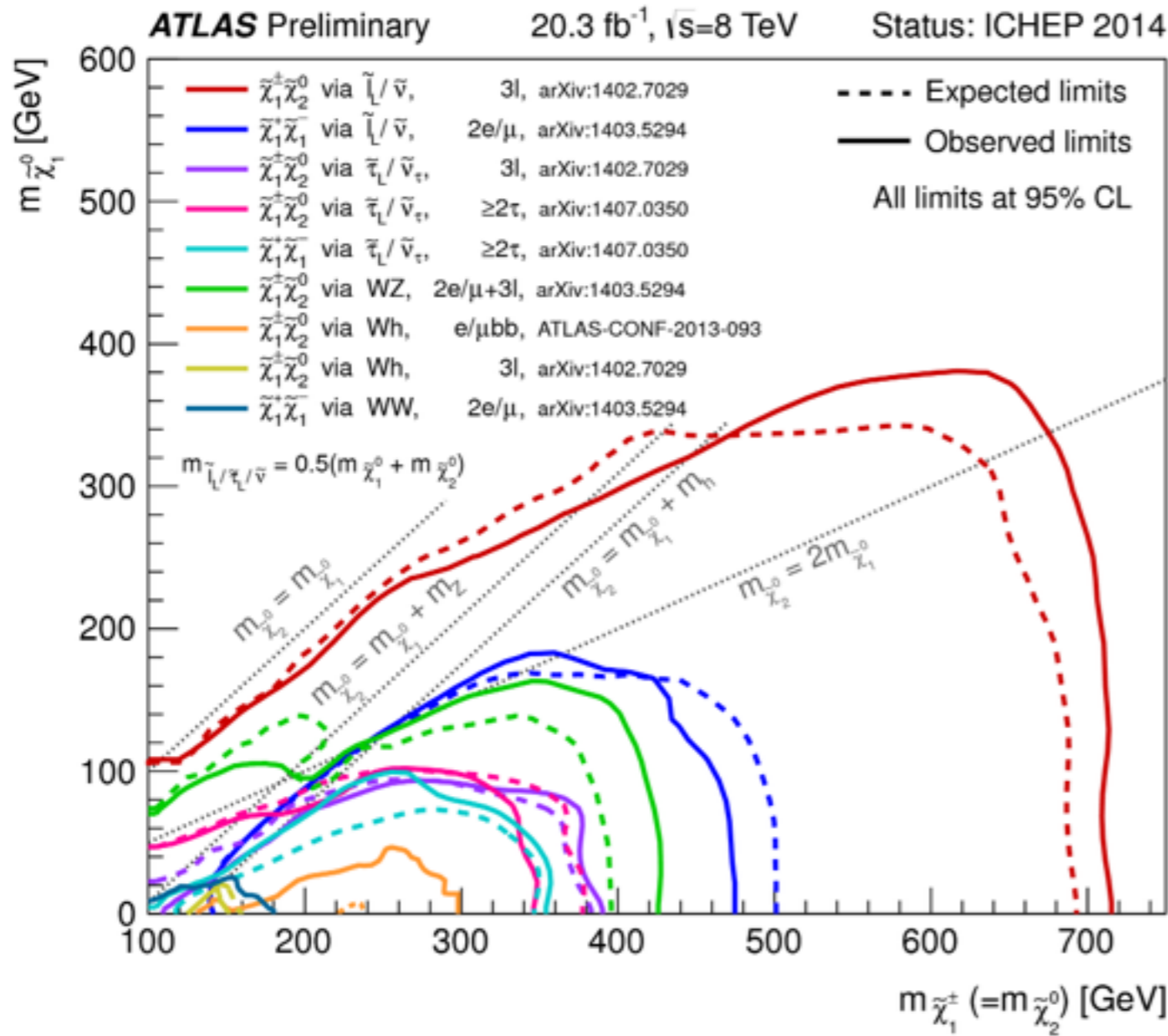


WZ like region challenging

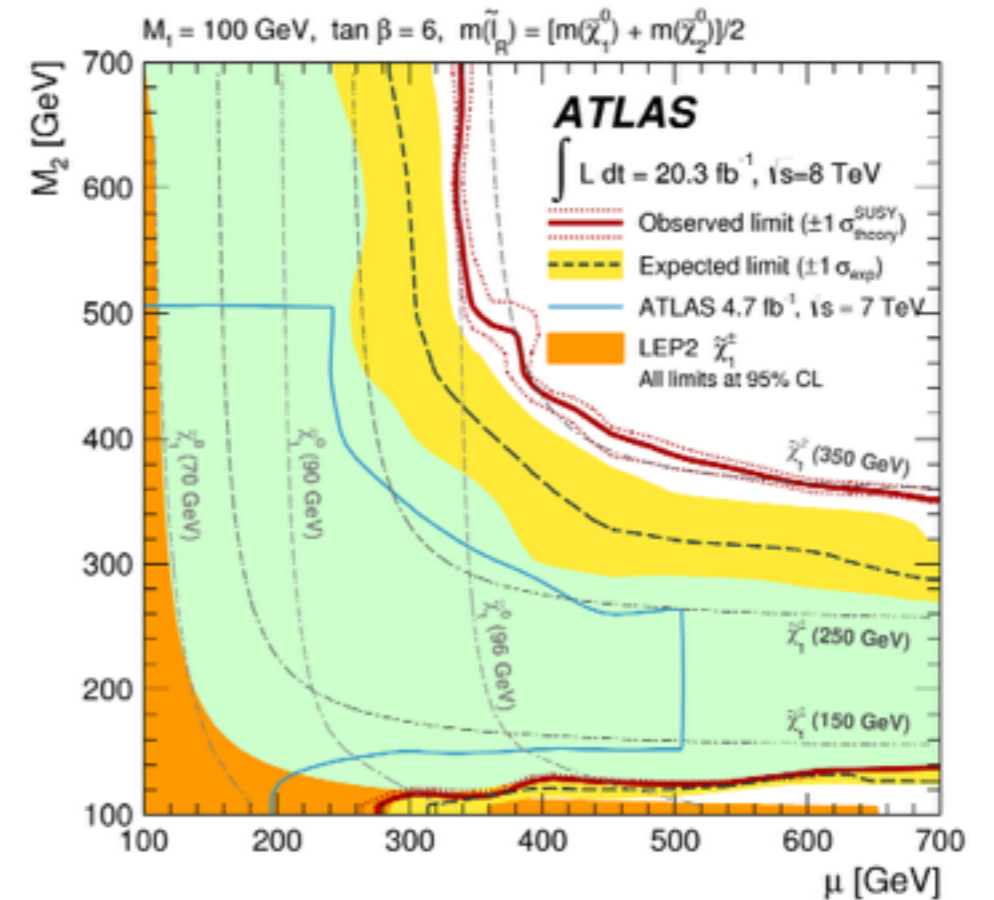


arXiv:1403.5294

Summary of EWK Production

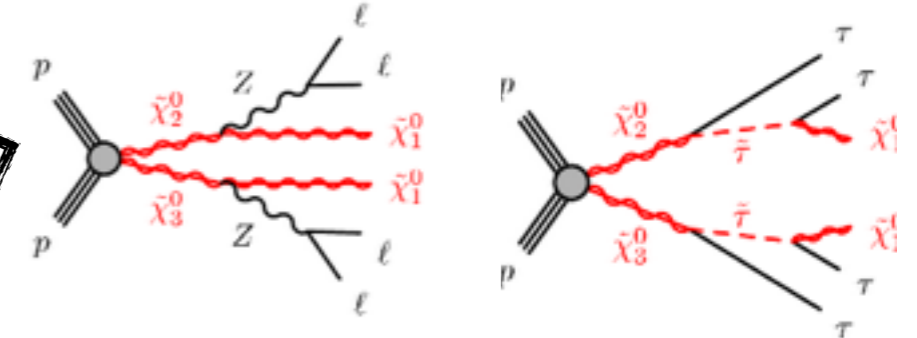


- pMSSM interpretation
- Sleptons very heavy
- $M_1=50$ GeV, $\tan\beta=6$

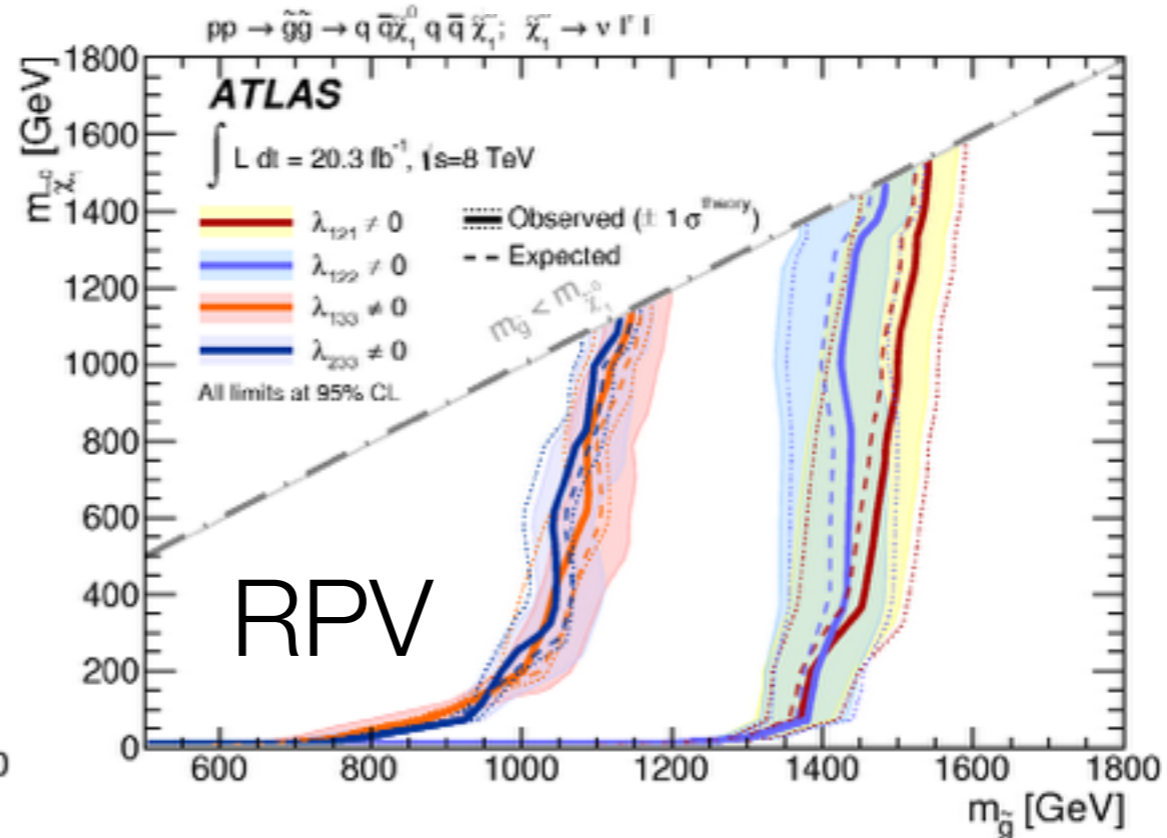
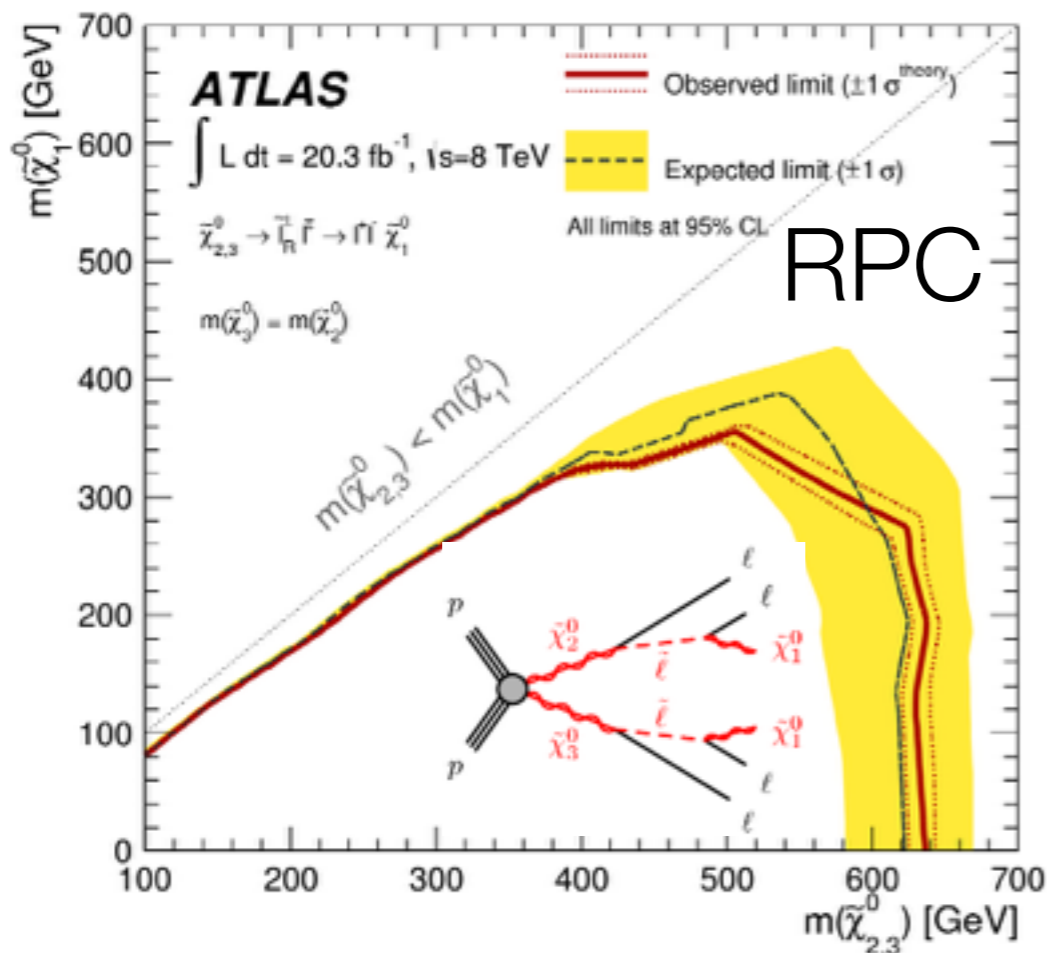
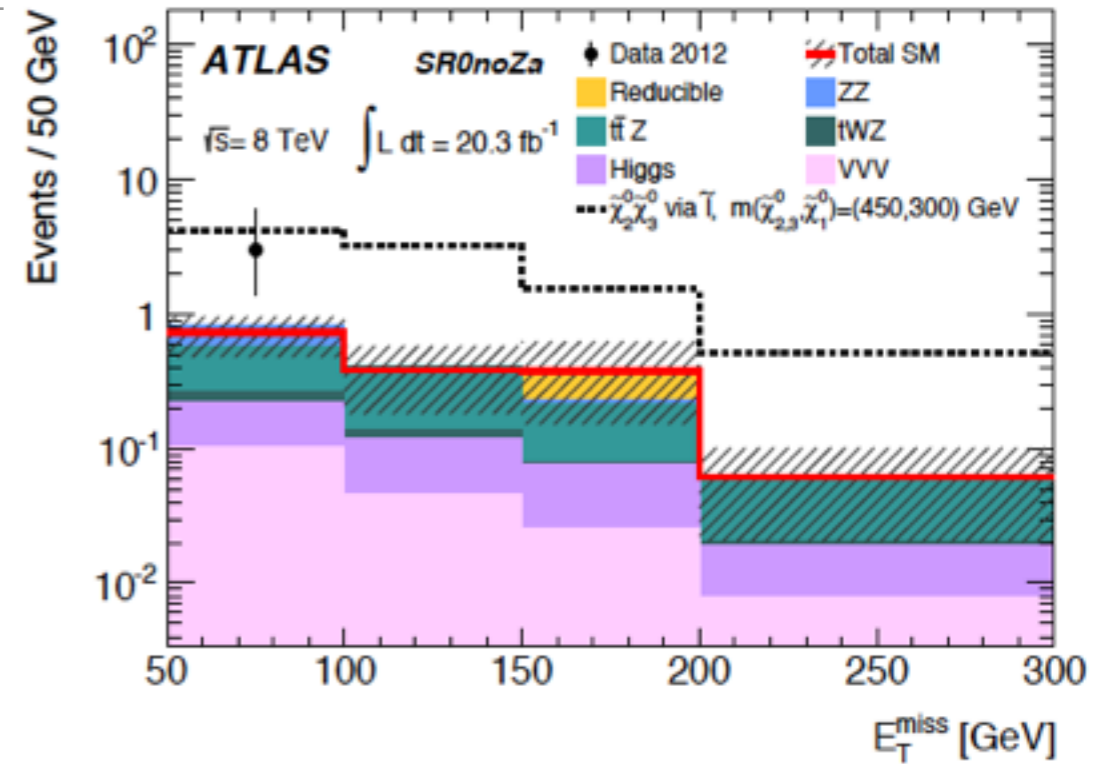


arXiv:1405.5086

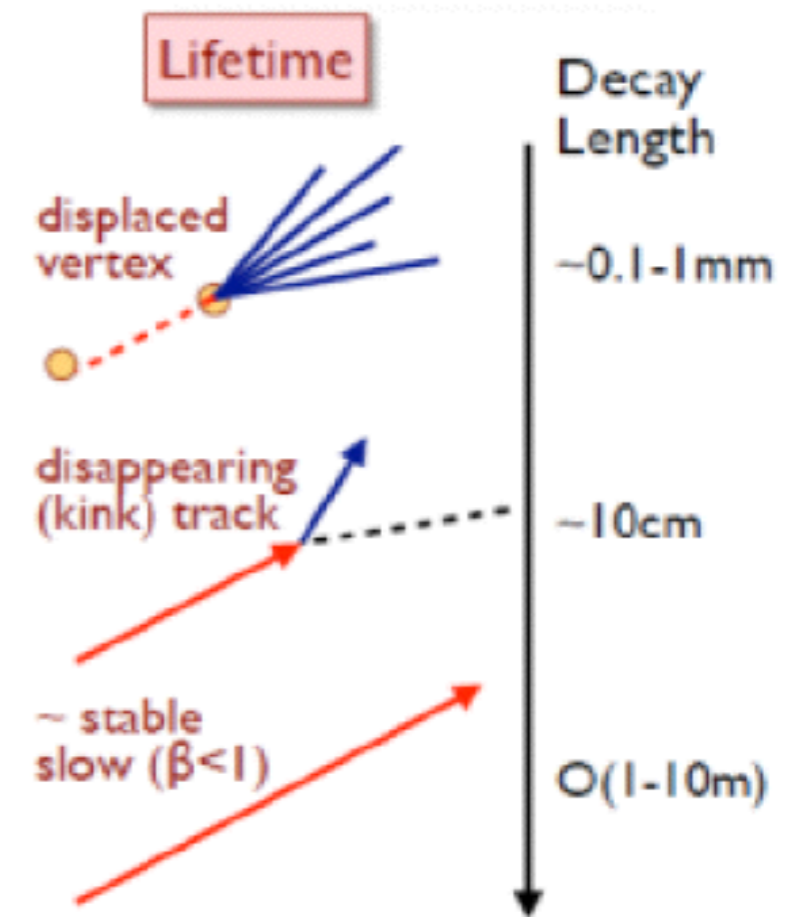
Multilepton (4 or more leptons)



- Low background
- Several models tested RPC and RPV
- SRs: 4 leptons (0,1,2 hadronic tau) + $M_{\text{eff}}/E_T^{\text{Miss}}$

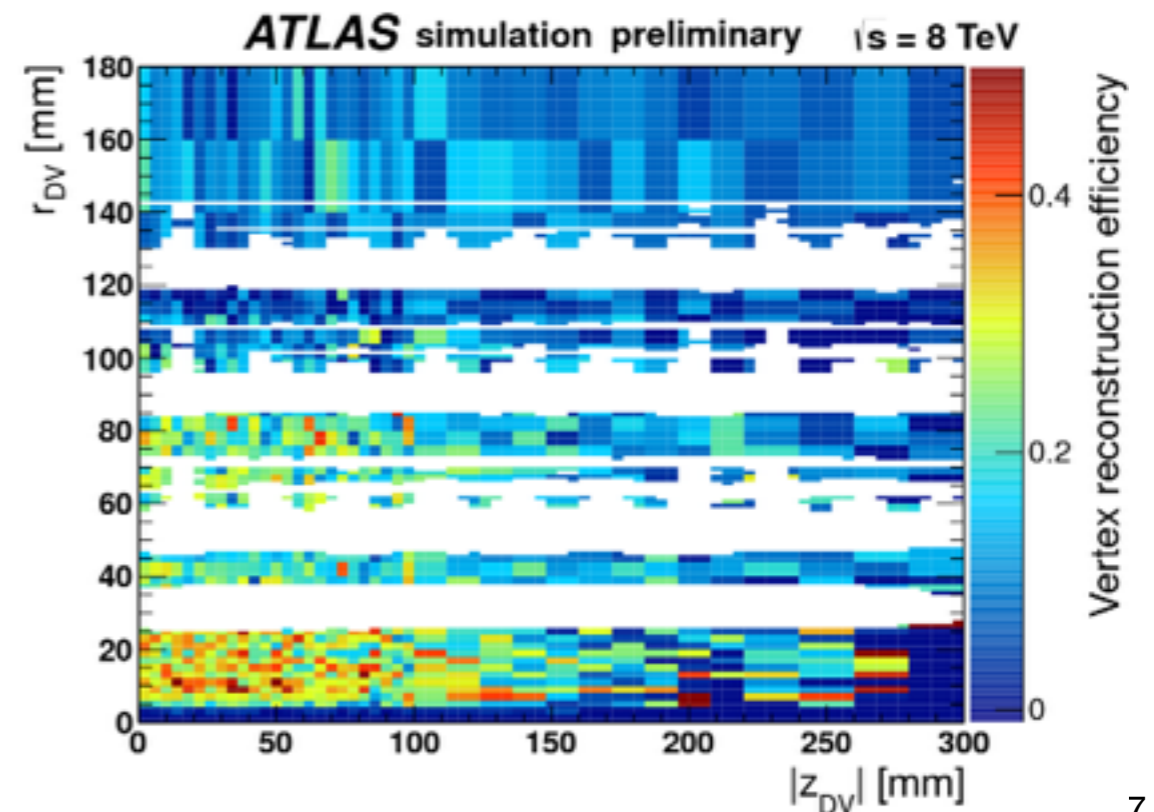
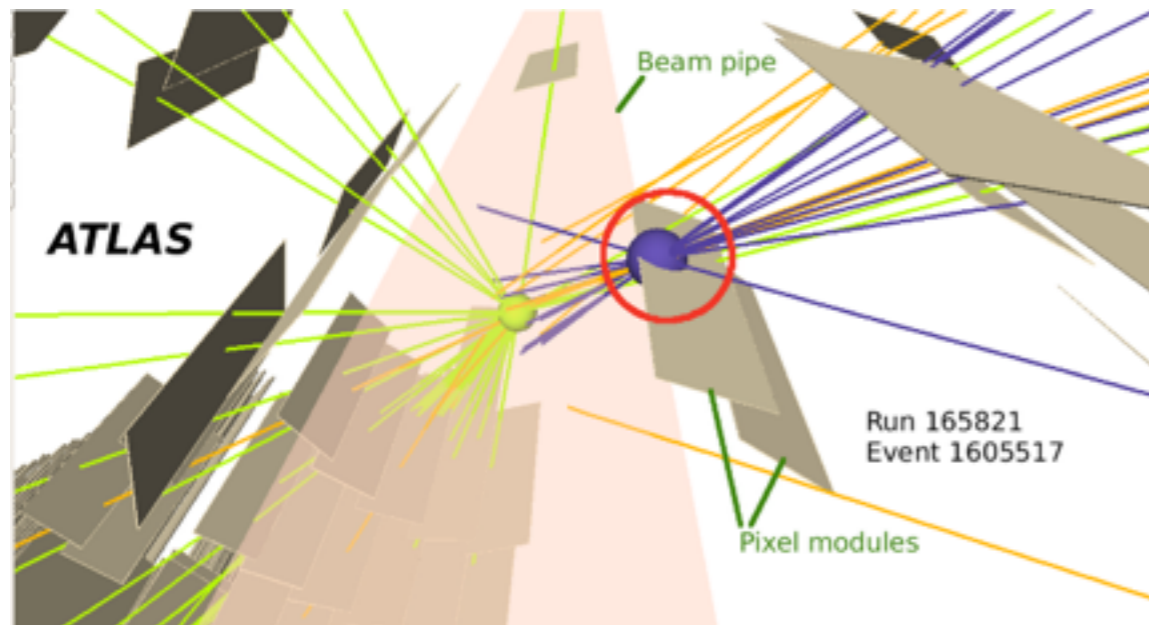
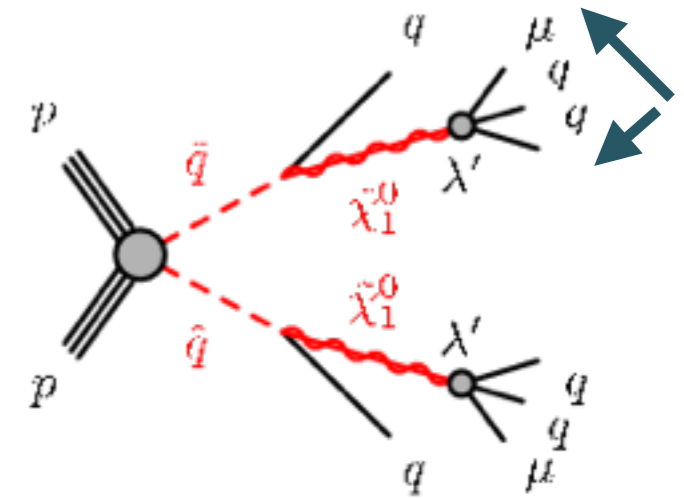


Long Lived Particles

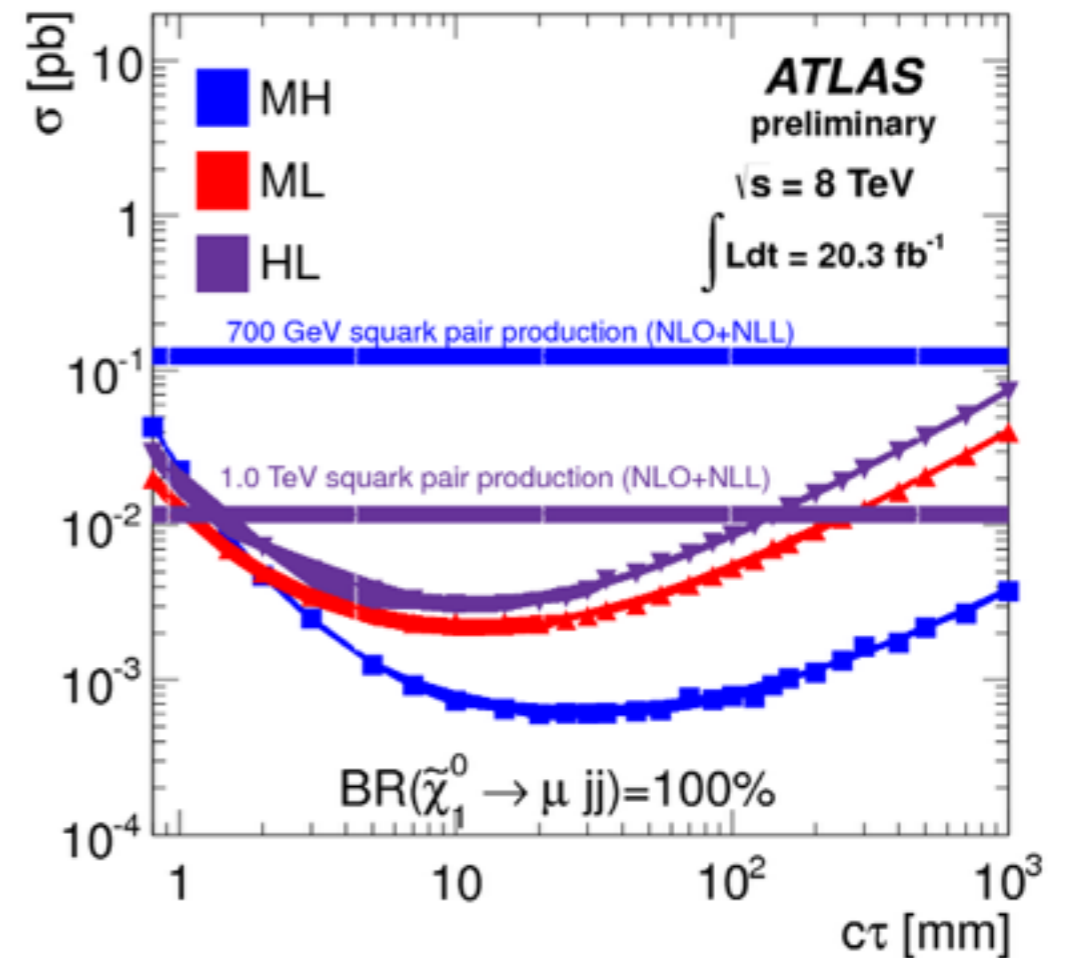
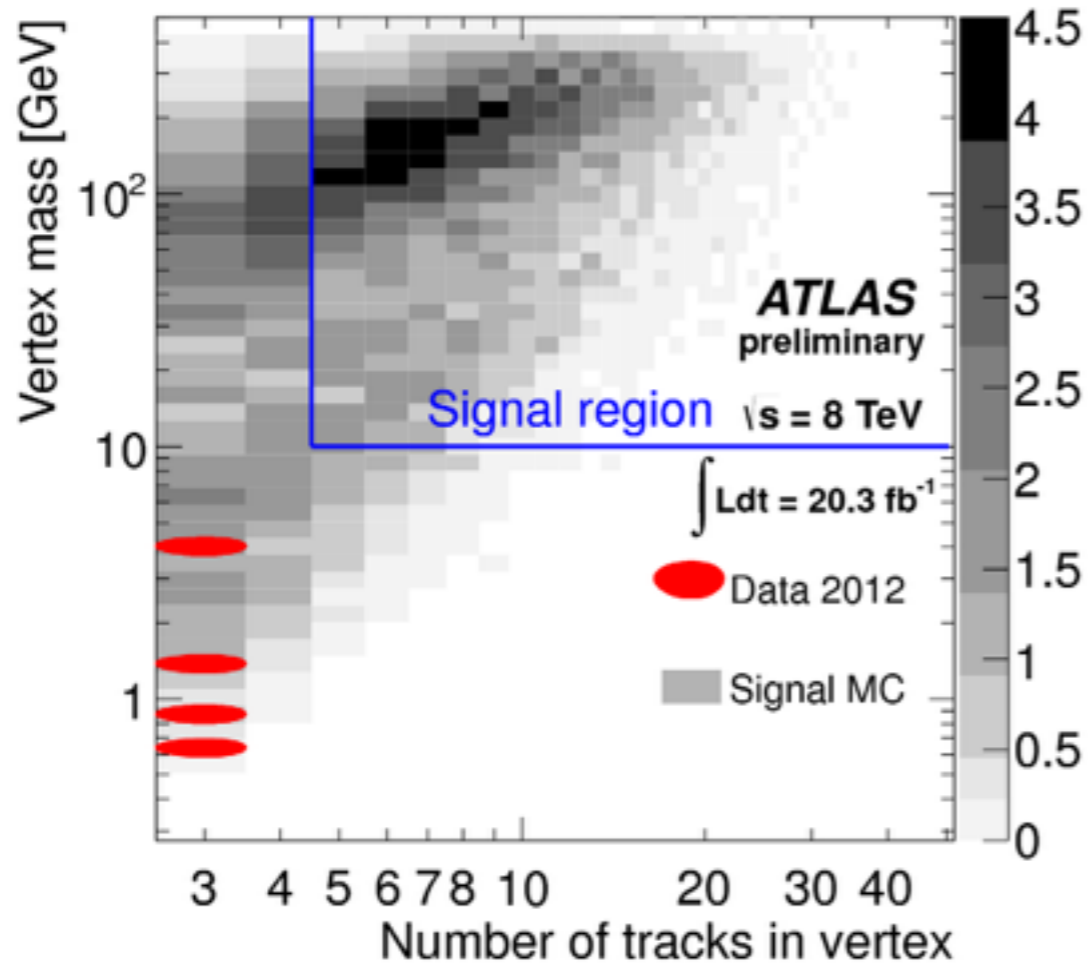


Muon and displaced vertex

- For very small couplings => non prompt particles
- Search for displaced vertices with muons **RPV**
- **Re-tracking** performed to increase signal efficiency
 - vertex 4mm away from PV and not close to ID material



Results



- Extremely low background **0.02±0.02**

- Limits set for different combinations of squark and neutralino masses

(M-medium, L-light)

ATLAS SUSY Searches* - 95% CL Lower Limits

Status: ICHEP 2014

ATLAS Preliminary

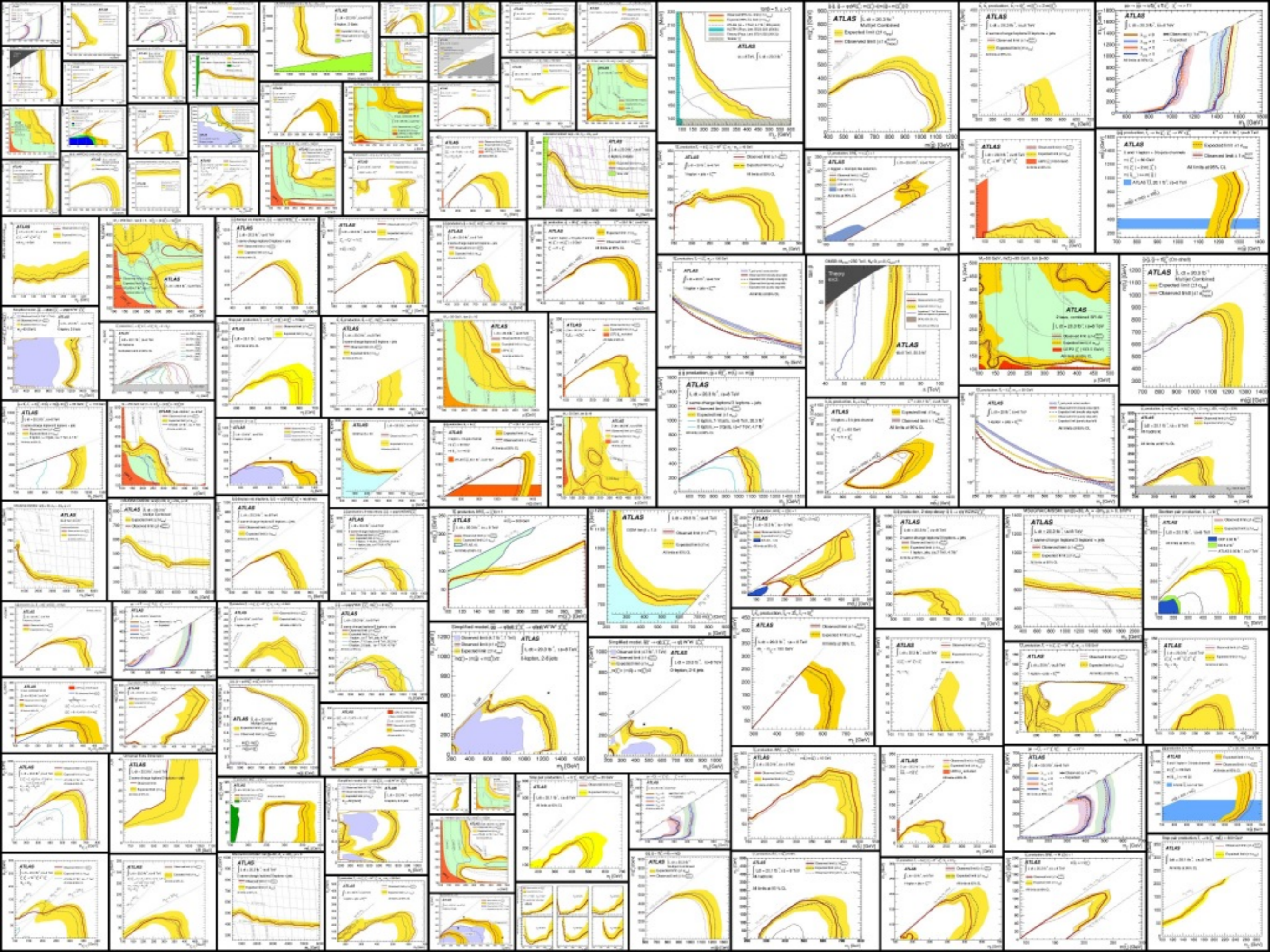
$\sqrt{s} = 7, 8 \text{ TeV}$

Model	e, μ, τ, γ	Jets	E_T^{miss}	$\int \mathcal{L} d\Omega [\text{fb}^{-1}]$	Mass limit	Reference		
Inclusive Searches	MSUGRA/CMSSM	0	2-6 jets	Yes	20.3	\tilde{q}, \tilde{g} 1.7 TeV	$m(\tilde{q})=m(\tilde{g})$	1405.7875
	MSUGRA/CMSSM	1 e, μ	3-6 jets	Yes	20.3	\tilde{g} 1.2 TeV	any $m(\tilde{q})$	ATLAS-CONF-2013-062
	MSUGRA/CMSSM	0	7-10 jets	Yes	20.3	\tilde{g} 1.1 TeV	any $m(\tilde{q})$	1308.1841
	$\tilde{q}\tilde{q}, \tilde{q} \rightarrow q\tilde{\chi}_1^0$	0	2-6 jets	Yes	20.3	\tilde{q} 850 GeV	$m(\tilde{\chi}_1^0)=0 \text{ GeV}, m(1^{\text{st}} \text{ gen. } \tilde{q})=m(2^{\text{nd}} \text{ gen. } \tilde{q})$	1405.7875
	$\tilde{g}\tilde{g}, \tilde{g} \rightarrow q\tilde{q}\tilde{\chi}_1^0$	0	2-6 jets	Yes	20.3	\tilde{g} 1.33 TeV	$m(\tilde{\chi}_1^0)=0 \text{ GeV}$	1405.7875
	$\tilde{g}\tilde{g}, \tilde{g} \rightarrow q\tilde{q}\tilde{\chi}_1^0 \rightarrow q\tilde{q}W\tilde{\chi}_1^0$	1 e, μ	3-6 jets	Yes	20.3	\tilde{g} 1.18 TeV	$m(\tilde{\chi}_1^0) < 200 \text{ GeV}, m(\tilde{\chi}^\pm)=0.5(m(\tilde{\chi}_1^0)+m(\tilde{g}))$	ATLAS-CONF-2013-062
	$\tilde{g}\tilde{g}, \tilde{g} \rightarrow q\tilde{q}(\ell\ell/\ell\nu/\nu\nu)\tilde{\chi}_1^0$	2 e, μ	0-3 jets	-	20.3	\tilde{g} 1.12 TeV	$m(\tilde{\chi}_1^0)=0 \text{ GeV}$	ATLAS-CONF-2013-089
	GMSB ($\tilde{\ell}$ NLSP)	2 e, μ	2-4 jets	Yes	4.7	\tilde{g} 1.24 TeV	$\tan\beta < 15$	1208.4688
	GMSB ($\tilde{\ell}$ NLSP)	1-2 τ + 0-1 ℓ	0-2 jets	Yes	20.3	\tilde{g} 1.6 TeV	$\tan\beta > 20$	1407.0603
	GGM (bino NLSP)	2 γ	-	Yes	20.3	\tilde{g} 1.28 TeV	$m(\tilde{\chi}_1^0) > 50 \text{ GeV}$	ATLAS-CONF-2014-001
	GGM (wino NLSP)	1 e, μ + γ	-	Yes	4.8	\tilde{g} 619 GeV	$m(\tilde{\chi}_1^0) > 50 \text{ GeV}$	ATLAS-CONF-2012-144
	GGM (higgsino-bino NLSP)	γ	1 b	Yes	4.8	\tilde{g} 900 GeV	$m(\tilde{\chi}_1^0) > 220 \text{ GeV}$	1211.1167
GGM (higgsino NLSP)	2 e, μ (Z)	0-3 jets	Yes	5.8	\tilde{g} 690 GeV	$m(\text{NLSP}) > 200 \text{ GeV}$	ATLAS-CONF-2012-152	
Gravitino LSP	0	mono-jet	Yes	10.5	$R^{3/2}$ scale 645 GeV	$m(\tilde{G}) > 10^{-1} \text{ eV}$	ATLAS-CONF-2012-147	
3rd gen. \tilde{g} med.	$\tilde{g} \rightarrow b\tilde{b}\tilde{\chi}_1^0$	0	3 b	Yes	20.1	\tilde{g} 1.25 TeV	$m(\tilde{\chi}_1^0) < 400 \text{ GeV}$	1407.0600
	$\tilde{g} \rightarrow t\tilde{t}\tilde{\chi}_1^0$	0	7-10 jets	Yes	20.3	\tilde{g} 1.1 TeV	$m(\tilde{\chi}_1^0) < 350 \text{ GeV}$	1308.1841
	$\tilde{g} \rightarrow t\tilde{t}\tilde{\chi}_1^0$	0-1 e, μ	3 b	Yes	20.1	\tilde{g} 1.34 TeV	$m(\tilde{\chi}_1^0) < 400 \text{ GeV}$	1407.0600
	$\tilde{g} \rightarrow b\tilde{t}\tilde{\chi}_1^0$	0-1 e, μ	3 b	Yes	20.1	\tilde{g} 1.3 TeV	$m(\tilde{\chi}_1^0) < 300 \text{ GeV}$	1407.0600
3rd gen. squarks direct production	$\tilde{b}_1\tilde{b}_1, \tilde{b}_1 \rightarrow b\tilde{\chi}_1^0$	0	2 b	Yes	20.1	\tilde{b}_1 100-620 GeV	$m(\tilde{\chi}_1^0) < 90 \text{ GeV}$	1308.2631
	$\tilde{b}_1\tilde{b}_1, \tilde{b}_1 \rightarrow t\tilde{\chi}_1^0$	2 e, μ (SS)	0-3 b	Yes	20.3	\tilde{b}_1 275-440 GeV	$m(\tilde{\chi}_1^0)=2 m(\tilde{\chi}_1^0)$	1404.2500
	$\tilde{t}_1\tilde{t}_1$ (light), $\tilde{t}_1 \rightarrow b\tilde{\chi}_1^0$	1-2 e, μ	1-2 b	Yes	4.7	\tilde{t}_1 110-167 GeV	$m(\tilde{\chi}_1^0)=55 \text{ GeV}$	1208.4305, 1209.2102
	$\tilde{t}_1\tilde{t}_1$ (light), $\tilde{t}_1 \rightarrow Wb\tilde{\chi}_1^0$	2 e, μ	0-2 jets	Yes	20.3	\tilde{t}_1 130-210 GeV	$m(\tilde{\chi}_1^0) = m(\tilde{t}_1) - m(W) - 50 \text{ GeV}, m(\tilde{t}_1) < m(\tilde{\chi}_1^0)$	1403.4853
	$\tilde{t}_1\tilde{t}_1$ (medium), $\tilde{t}_1 \rightarrow t\tilde{\chi}_1^0$	2 e, μ	2 jets	Yes	20.3	\tilde{t}_1 215-530 GeV	$m(\tilde{\chi}_1^0)=1 \text{ GeV}$	1403.4853
	$\tilde{t}_1\tilde{t}_1$ (medium), $\tilde{t}_1 \rightarrow b\tilde{\chi}_1^0$	0	2 b	Yes	20.1	\tilde{t}_1 150-580 GeV	$m(\tilde{\chi}_1^0) < 200 \text{ GeV}, m(\tilde{\chi}_1^\pm) - m(\tilde{\chi}_1^0) = 5 \text{ GeV}$	1308.2631
	$\tilde{t}_1\tilde{t}_1$ (heavy), $\tilde{t}_1 \rightarrow t\tilde{\chi}_1^0$	1 e, μ	1 b	Yes	20	\tilde{t}_1 210-640 GeV	$m(\tilde{\chi}_1^0)=0 \text{ GeV}$	1407.0583
	$\tilde{t}_1\tilde{t}_1$ (heavy), $\tilde{t}_1 \rightarrow t\tilde{\chi}_1^0$	0	2 b	Yes	20.1	\tilde{t}_1 260-640 GeV	$m(\tilde{\chi}_1^0)=0 \text{ GeV}$	1406.1122
	$\tilde{t}_1\tilde{t}_1, \tilde{t}_1 \rightarrow c\tilde{\chi}_1^0$	0	mono-jet/c-tag	Yes	20.3	\tilde{t}_1 90-240 GeV	$m(\tilde{t}_1) - m(\tilde{\chi}_1^0) < 85 \text{ GeV}$	1407.0608
	$\tilde{t}_1\tilde{t}_1$ (natural GMSB)	2 e, μ (Z)	1 b	Yes	20.3	\tilde{t}_1 150-580 GeV	$m(\tilde{\chi}_1^0) > 150 \text{ GeV}$	1403.5222
$\tilde{t}_2\tilde{t}_2, \tilde{t}_2 \rightarrow \tilde{t}_1 + Z$	3 e, μ (Z)	1 b	Yes	20.3	\tilde{t}_2 290-600 GeV	$m(\tilde{\chi}_1^0) < 200 \text{ GeV}$	1403.5222	
EW direct	$\tilde{\chi}_{1,R}^+\tilde{\chi}_{1,R}^-, \tilde{\chi}_1^0 \rightarrow \ell\tilde{\chi}_1^0$	2 e, μ	0	Yes	20.3	$\tilde{\chi}_1^\pm$ 90-325 GeV	$m(\tilde{\chi}_1^0)=0 \text{ GeV}$	1403.5294
	$\tilde{\chi}_1^+\tilde{\chi}_1^-, \tilde{\chi}_1^0 \rightarrow \tilde{\nu}(\tilde{\nu})$	2 e, μ	0	Yes	20.3	$\tilde{\chi}_1^\pm$ 140-465 GeV	$m(\tilde{\chi}_1^0)=0 \text{ GeV}, m(\tilde{\nu}, \tilde{\nu})=0.5(m(\tilde{\chi}_1^0)+m(\tilde{\chi}_1^0))$	1403.5294
	$\tilde{\chi}_1^+\tilde{\chi}_1^-, \tilde{\chi}_1^0 \rightarrow \tilde{\nu}(\tilde{\nu})$	2 τ	-	Yes	20.3	$\tilde{\chi}_1^\pm$ 100-350 GeV	$m(\tilde{\chi}_1^0)=0 \text{ GeV}, m(\tilde{\nu}, \tilde{\nu})=0.5(m(\tilde{\chi}_1^0)+m(\tilde{\chi}_1^0))$	1407.0350
	$\tilde{\chi}_1^+\tilde{\chi}_1^0 \rightarrow \tilde{\nu}_1\nu\tilde{\chi}_1^0(\tilde{\nu}\nu), \ell\nu\tilde{\chi}_1^0(\tilde{\nu}\nu)$	3 e, μ	0	Yes	20.3	$\tilde{\chi}_1^\pm, \tilde{\chi}_1^0$ 700 GeV	$m(\tilde{\chi}_1^0)=m(\tilde{\chi}_2^0), m(\tilde{\chi}_1^0)=0, m(\tilde{\nu}, \tilde{\nu})=0.5(m(\tilde{\chi}_1^0)+m(\tilde{\chi}_1^0))$	1402.7029
	$\tilde{\chi}_1^+\tilde{\chi}_1^0 \rightarrow W\tilde{\chi}_1^0 Z\tilde{\chi}_1^0$	2-3 e, μ	0	Yes	20.3	$\tilde{\chi}_1^\pm, \tilde{\chi}_1^0$ 420 GeV	$m(\tilde{\chi}_1^0)=m(\tilde{\chi}_2^0), m(\tilde{\chi}_1^0)=0, \text{ sleptons decoupled}$	1403.5294, 1402.7029
	$\tilde{\chi}_1^+\tilde{\chi}_1^0 \rightarrow W\tilde{\chi}_1^0 h\tilde{\chi}_1^0$	1 e, μ	2 b	Yes	20.3	$\tilde{\chi}_1^\pm, \tilde{\chi}_1^0$ 285 GeV	$m(\tilde{\chi}_1^0)=m(\tilde{\chi}_2^0), m(\tilde{\chi}_1^0)=0, \text{ sleptons decoupled}$	ATLAS-CONF-2013-093
	$\tilde{\chi}_{2,3}^0\tilde{\chi}_{2,3}^0 \rightarrow \tilde{\chi}_1^0\tilde{\chi}_1^0$	4 e, μ	0	Yes	20.3	$\tilde{\chi}_{2,3}^0$ 620 GeV	$m(\tilde{\chi}_2^0)=m(\tilde{\chi}_3^0), m(\tilde{\chi}_1^0)=0, m(\tilde{\nu}, \tilde{\nu})=0.5(m(\tilde{\chi}_2^0)+m(\tilde{\chi}_1^0))$	1405.5086
	Long-lived particles	Direct $\tilde{\chi}_1^+\tilde{\chi}_1^-$ prod., long-lived $\tilde{\chi}_1^\pm$	Disapp. trk	1 jet	Yes	20.3	$\tilde{\chi}_1^\pm$ 270 GeV	$m(\tilde{\chi}_1^\pm) - m(\tilde{\chi}_1^0) = 160 \text{ MeV}, \tau(\tilde{\chi}_1^\pm) = 0.2 \text{ ns}$
Stable, stopped \tilde{g} R-hadron		0	1-5 jets	Yes	27.9	\tilde{g} 832 GeV	$m(\tilde{\chi}_1^0) = 100 \text{ GeV}, 10 \mu\text{s} < \tau(\tilde{g}) < 1000 \text{ s}$	1310.6584
GMSB, stable $\tilde{t}, \tilde{\chi}_1^0 \rightarrow \tilde{t}(\tilde{t}, \tilde{\mu}) + \tau(e, \mu)$		1-2 μ	-	-	15.9	\tilde{t} 475 GeV	$10 < \tan\beta < 50$	ATLAS-CONF-2013-058
GMSB, $\tilde{\chi}_1^0 \rightarrow \gamma\tilde{G}$, long-lived $\tilde{\chi}_1^0$		2 γ	-	Yes	4.7	$\tilde{\chi}_1^0$ 230 GeV	$0.4 < \tau(\tilde{\chi}_1^0) < 2 \text{ ns}$	1304.6310
$\tilde{q}\tilde{q}, \tilde{\chi}_1^0 \rightarrow q\tilde{q}\mu$ (RPV)		1 μ , displ. vtx	-	-	20.3	\tilde{q} 1.0 TeV	$1.5 < c\tau < 156 \text{ mm}, \text{BR}(\mu) = 1, m(\tilde{\chi}_1^0) = 108 \text{ GeV}$	ATLAS-CONF-2013-092
RPV	LFV $pp \rightarrow \tilde{\nu}_\tau + X, \tilde{\nu}_\tau \rightarrow e + \mu$	2 e, μ	-	-	4.6	$\tilde{\nu}_\tau$ 1.61 TeV	$\lambda'_{311} = 0.10, \lambda'_{332} = 0.05$	1212.1272
	LFV $pp \rightarrow \tilde{\nu}_\tau + X, \tilde{\nu}_\tau \rightarrow e(\mu) + \tau$	1 e, μ + τ	-	-	4.6	$\tilde{\nu}_\tau$ 1.1 TeV	$\lambda'_{311} = 0.10, \lambda'_{323} = 0.05$	1212.1272
	Bilinear RPV CMSSM	2 e, μ (SS)	0-3 b	Yes	20.3	\tilde{q}, \tilde{g} 1.35 TeV	$m(\tilde{q})=m(\tilde{g}), c\tau_{LSP} < 1 \text{ mm}$	1404.2500
	$\tilde{\chi}_1^+\tilde{\chi}_1^-, \tilde{\chi}_1^0 \rightarrow W\tilde{\chi}_1^0, \tilde{\chi}_1^0 \rightarrow ee\tilde{\nu}_\mu, e\mu\tilde{\nu}_e$	4 e, μ	-	Yes	20.3	$\tilde{\chi}_1^\pm$ 750 GeV	$m(\tilde{\chi}_1^0) > 0.2 \times m(\tilde{\chi}_1^\pm), \lambda'_{121} \neq 0$	1405.5086
	$\tilde{\chi}_1^+\tilde{\chi}_1^-, \tilde{\chi}_1^0 \rightarrow W\tilde{\chi}_1^0, \tilde{\chi}_1^0 \rightarrow \tau\tau\tilde{\nu}_e, e\tau\tilde{\nu}_\tau$	3 e, μ + τ	-	Yes	20.3	$\tilde{\chi}_1^\pm$ 450 GeV	$m(\tilde{\chi}_1^0) > 0.2 \times m(\tilde{\chi}_1^\pm), \lambda'_{131} \neq 0$	1405.5086
	$\tilde{g} \rightarrow q\tilde{q}\tilde{q}$	0	6-7 jets	-	20.3	\tilde{g} 916 GeV	$\text{BR}(\mu) = \text{BR}(b) = \text{BR}(c) = 0\%$	ATLAS-CONF-2013-091
$\tilde{g} \rightarrow \tilde{t}_1\tilde{t}_1, \tilde{t}_1 \rightarrow b\tilde{s}$	2 e, μ (SS)	0-3 b	Yes	20.3	\tilde{g} 850 GeV		1404.250	
Other	Scalar gluon pair, $\text{sgluon} \rightarrow q\tilde{q}$	0	4 jets	-	4.6	sgluon 100-287 GeV	incl. limit from 1110.2693	1210.4826
	Scalar gluon pair, $\text{sgluon} \rightarrow t\tilde{t}$	2 e, μ (SS)	2 b	Yes	14.3	sgluon 350-800 GeV		ATLAS-CONF-2013-051
	WIMP interaction (D5, Dirac χ)	0	mono-jet	Yes	10.5	M^* scale 704 GeV	$m(\chi) < 80 \text{ GeV}, \text{limit of } < 687 \text{ GeV for D8}$	ATLAS-CONF-2012-147

$\sqrt{s} = 7 \text{ TeV}$ full data $\sqrt{s} = 8 \text{ TeV}$ partial data $\sqrt{s} = 8 \text{ TeV}$ full data

10⁻¹ 1 Mass scale [TeV]

*Only a selection of the available mass limits on new states or phenomena is shown. All limits quoted are observed minus 1 σ theoretical signal cross section uncertainty.



Conclusions

- SUSY Searches at ATLAS cover a large set of possible models
 - 18 papers published on the 8 TeV dataset
 - <https://twiki.cern.ch/twiki/bin/view/AtlasPublic/SupersymmetryPublicResults/>

