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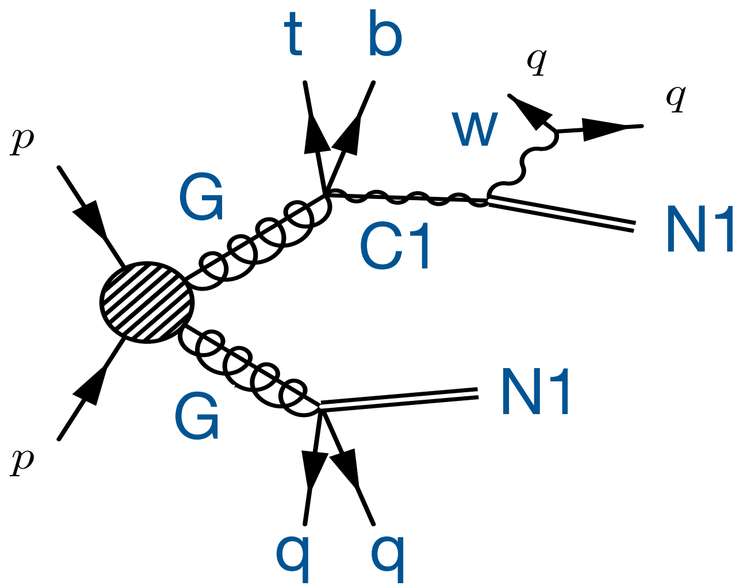
SM	gl	gam, z, w, h0, h2, h3, hpm	q	t	b	e, mu, tau	nu
SUSY	G	N1, .., N4, C1, C2	Q	T1, T2	B1, B2	SE,SMU,TAU1,TAU2	SNU, NUT



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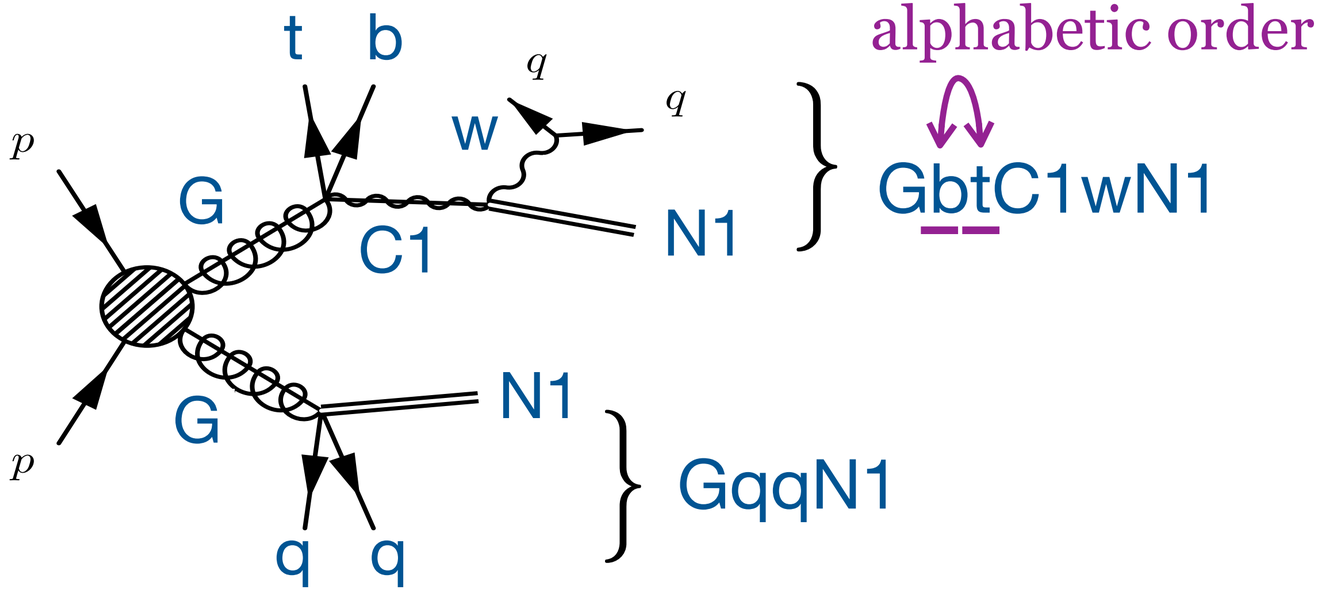

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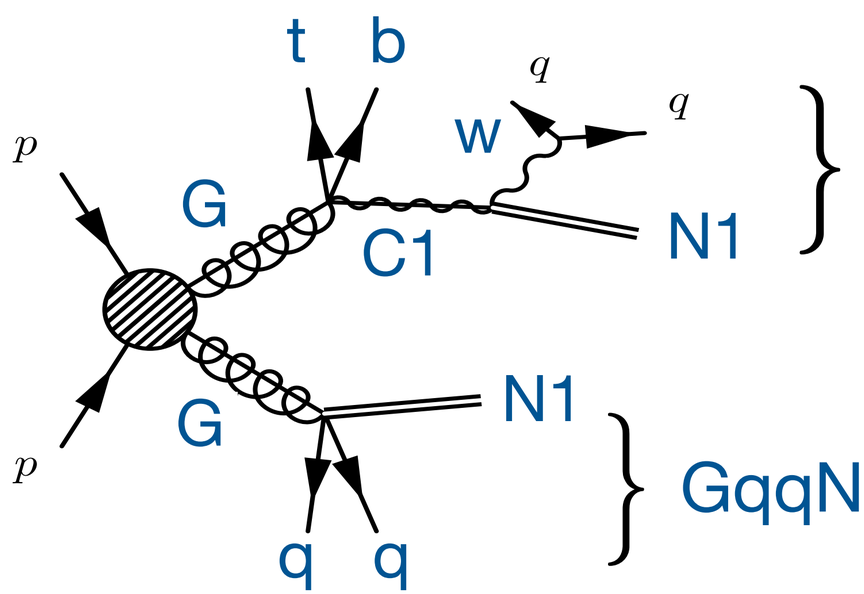


alphabetic order

GbtC1wN1

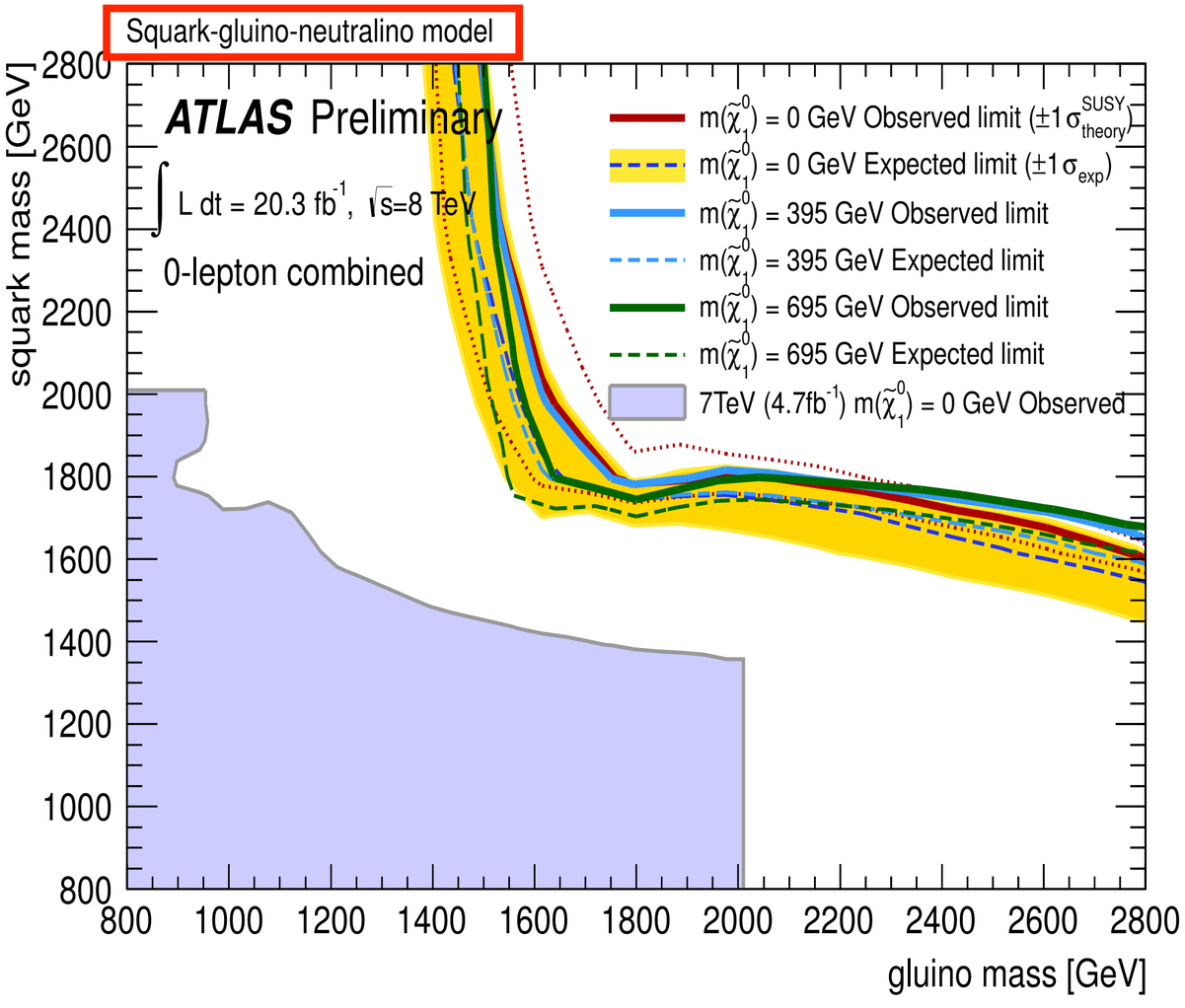
GqqN1

can define unique string

GbtC1wN1_GqqN1

alphabetic order

Is it irreducible?



The efficiency is fixed in a particular mixture of

$$\tilde{q} \to q\tilde{\chi}_1^0 : \tilde{q} \to q\tilde{\chi}_1^0$$

$$\tilde{q} \to q\tilde{\chi}_1^0 : \tilde{g} \to qq\tilde{\chi}_1^0$$

The ratio of the mixture changes if going to a different model with

$$\tilde{g} \to t\bar{t}\tilde{\chi}_1^0$$

$$\vdots$$

The efficiency of this simplified model cannot be used in other models.

Is it irreducible?

GbtC1wN1_GqqN1 ?

w→qq
w→enu
...

- We do not decompose SM particle's decays because the BRs are fixed and common for all models

→ simplicity

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---

charge_flag =
off on

C1 → C1p, C1m
w → wp, wm
...

- Charge specification is not necessary as long as

$$\frac{\sigma(\text{ process })}{\sigma(\text{ process}^C)}$$

is fixed. → will be needed in CPV MSSM

e.g.) in CPC MSSM,

$$\frac{\sigma(\tilde{q} \to q\tilde{\chi}_1^+)}{\sigma(\tilde{q} \to q\tilde{\chi}_1^-)}$$

is not 1, but fixed by the masses through the yields of $\tilde{u}, \tilde{d}, \tilde{u}^*, \tilde{d}^*$.

String manipulation

SM	gl	gam, z, w, h0, h2, h3, hpm	q	t	b	e, mu, tau	nu
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- ‘gl’ shouldn’t be ‘g’

```
>>> 'gl' in 'N2gamN1'
False
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find $\tilde{g}$ in $\tilde{\chi}_2^0 \to \gamma\tilde{\chi}_1^0$

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- truncating unnecessary decay

  if $m_{C1} \sim m_{N1}$, e and nu in C1enuN1 is too soft to be detected.

  QqC1enuN1 can be easily integrated into QqN1 in Python

```
In [3]: sigmaBR = {'QqN1': 10, 'QqC1enuN1': 8}

In [4]: newSB = deepcopy(sigmaBR)

In [5]: for topo in sigmaBR:
   ...:     if 'C1enu' in topo:
   ...:         del newSB[topo]
   ...:         newSB[topo.split('C1enu')[0] + topo.split('C1enu')[1]] += sigmaBR[topo]
   ...:

In [6]: pprint(newSB)
{'QqN1': 18}
```