Hadron Colliders: gluino projections

European Strategy

(R-parity conserving SUSY, prompt searches)

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	Model	$\int \mathcal{L} dt [ab^{-1}]$] √s [TeV]	Mass limit (95% CL exclusion)	Conditions
HL-LHC	$\tilde{g}\tilde{g}, \tilde{g} \rightarrow q\bar{q}\tilde{\chi}_{1}^{0}$	3	14	3.2 TeV	$m(\tilde{\chi}_1^0)=0$
	$\tilde{g}\tilde{g}, \tilde{g} \rightarrow q\bar{q}\tilde{\chi}_1^0$	3	14	1.5 TeV	$m(\tilde{g}) \sim m(\tilde{\chi}_1^0) \text{+10 GeV}$
	$\tilde{g}\tilde{g}, \tilde{g} \rightarrow t \tilde{t} \tilde{\chi}_1^0$	3	14	2.5 TeV	$m(\tilde{\chi}_1^0){=}0$
HE-LHC	$\tilde{g}\tilde{g}, \tilde{g} \rightarrow t \bar{c} \tilde{\chi}_1^0$	3	14	2.6 TeV	$m(\tilde{\chi}_1^0)$ =500 GeV
	$\tilde{g}\tilde{g}, \tilde{g} \rightarrow q\bar{q}\tilde{\chi}_{1}^{0}$	15	27	5.7 TeV	$m(\tilde{\chi}_1^0)=0$
	$\tilde{g}\tilde{g}, \tilde{g} \rightarrow q\bar{q}\tilde{\chi}_{1}^{0}$	15	27	2.6 TeV	$m(\tilde{g}) \sim m(\tilde{\chi}_1^0) \text{+10 GeV}$
	NUHM2, $\tilde{g} \rightarrow t\tilde{t}$	15	27	5.9 TeV	$m(\tilde{\chi}^0_1){=}0$
FCC-hh	$\tilde{g}\tilde{g}, \tilde{g} \rightarrow q\bar{q}\tilde{\chi}_{1}^{0}$	30	100	17.0 TeV	$m(\tilde{\chi}_1^0)=0$
	$\tilde{g}\tilde{g}, \tilde{g} \rightarrow q\bar{q}\tilde{\chi}_1^0$	30	100	7.5 TeV	$m(\tilde{g}) \sim m(\tilde{\chi}_1^0) {+} 10 \; GeV \; (^*)$
	$\tilde{g}\tilde{g}, \; \tilde{g} \rightarrow t\bar{t}\tilde{\chi}_{1}^{0}$	30	100	11.0 TeV	$m(\tilde{\chi}^0_1){=}0$
LE-FCC	$\tilde{g}\tilde{g}, \tilde{g} \rightarrow q\bar{q}\tilde{\chi}_{1}^{0}$	15	37.5	7.4 TeV	$m(\tilde{\mathcal{X}}_1^0)=0 \ (^{**})$
	$\tilde{g}\tilde{g}, \tilde{g} \rightarrow q\bar{q}\tilde{\chi}_1^0$	15	37.5	3.6 TeV	$m(\tilde{g}) \sim m(\tilde{\chi}_1^0) {+} 10 \text{ GeV (***)}$
_	$\tilde{g}\tilde{g}, \tilde{g} \rightarrow t\bar{t}\tilde{\chi}_{1}^{0}$	15	37.5	7.6,TeV	$m(\tilde{\chi}_1^0)=0 \ (*)$
	(*): extrapo	lated from HL-	or HE-LHC	tudies 10 Mass scale [TeV]	
("'): extrapolated from FCC-hh prospects					