

t' (4th Generation) Quark, Searches for

MASS LIMITS for t' (4th Generation) Quark or Hadron in $p\bar{p}$ Collisions

VALUE (GeV)	CL%	DOCUMENT ID	TECN	COMMENT
>256	95	1,2 AALTONEN 08H	CDF	$p\bar{p}$ at 1.96 GeV

¹ Searches for pair production of a new heavy top-like quark t' decaying to a W boson and another quark by fitting the observed spectrum of total transverse energy and reconstructed t' mass in the lepton + jets events.

² HUANG 08 reexamined the t' mass lower bound of 256 GeV obtained in AALTONEN 08H that assumes $B(b' \rightarrow qZ) = 1$ for $q = u, c$ which does not hold when $m_{b'} < m_{t'} - m_W$ or the mixing $\sin^2(\theta_{bt'})$ is so tiny that the decay occurs outside of the vertex detector.

Fig. 1 gives that lower bound on $m_{t'}$ in the plane of $\sin^2(\theta_{bt'})$ and $m_{b'}$.

REFERENCES FOR Searches for (Fourth Generation) t' Quark

AALTONEN	08H	PRL 100 161803	T. Aaltonen <i>et al.</i>	(CDF Collab.)
HUANG	08	PR D77 037302	P.Q. Hung, M. Sher	(UVA, WILL)