

## $t'$ ( $4^{th}$ Generation) Quark, Searches for

### MASS LIMITS for $t'$ ( $4^{th}$ 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

<sup>1</sup> 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.

<sup>2</sup> 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)