

Technicolor

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MASS LIMITS for Resonances in Models of Dynamical Electroweak Symmetry Breaking

VALUE (GeV)	CL%	DOCUMENT ID	TECN	COMMENT
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
>280	95	1 ABULENCIA	05A CDF	$\rho_T \rightarrow e^+ e^-, \mu^+ \mu^-$
		2 CHEKANOV	02B ZEUS	color octet techni- π
>207	95	3 ABAZOV	01B D0	$\rho_T \rightarrow e^+ e^-$
none 90–206.7	95	4 ABDALLAH	01 DLPH	$e^+ e^- \rightarrow \rho_T$
		5 AFFOLDER	00F CDF	color-singlet techni- ρ , $\rho_T \rightarrow W \pi_T, 2\pi_T$
>600	95	6 AFFOLDER	00K CDF	color-octet techni- ρ , $\rho_{T8} \rightarrow 2\pi_{LQ}$
>480	95	7 AFFOLDER	00L CDF	top-color Z'
none 350–440	95	8 ABE	99F CDF	color-octet techni- ρ , $\rho_{T8} \rightarrow \bar{b}b$
>465	95	9 ABE	99H CDF	color-octet techni- ρ , $\rho_{T8} \rightarrow 2\pi_{LQ}$
		10 ABE	99N CDF	techni- ω , $\omega_T \rightarrow \gamma \bar{b}b$
none 260–480	95	11 ABE	97G CDF	color-octet techni- ρ , $\rho_{T8} \rightarrow 2\text{jets}$

¹ ABULENCIA 05A search for resonances decaying to electron or muon pairs in $p\bar{p}$ collisions. at $\sqrt{s} = 1.96$ TeV. The limit assumes Technicolor-scale mass parameters $M_V = M_A = 500$ GeV.

² CHEKANOV 02B search for color octet techni- π P decaying into dijets in ep collisions. See their Fig. 5 for the limit on $\sigma(ep \rightarrow ePX) \cdot B(P \rightarrow 2j)$.

³ ABAZOV 01B searches for vector techni-resonances (ρ_T, ω_T) decaying to $e^+ e^-$. The limit assumes $M_{\rho_T} = M_{\omega_T} < M_{\pi_T} + M_W$.

⁴ The limit is independent of the π_T mass. See their Fig. 9 and Fig. 10 for the exclusion plot in the $M_{\rho_T} - M_{\pi_T}$ plane. ABDALLAH 01 limit on the techni-pion mass is $M_{\pi_T} > 79.8$ GeV for $N_D=2$, assuming its point-like coupling to gauge bosons.

⁵ AFFOLDER 00F search for ρ_T decaying into $W \pi_T$ or $\pi_T \pi_T$ with $W \rightarrow \ell \nu$ and $\pi_T \rightarrow \bar{b}b, \bar{b}c$. See Fig. 1 in the above Note on “Dynamical Electroweak Symmetry Breaking” for the exclusion plot in the $M_{\rho_T} - M_{\pi_T}$ plane.

⁶ AFFOLDER 00K search for the ρ_{T8} decaying into $\pi_{LQ} \pi_{LQ}$ with $\pi_{LQ} \rightarrow b\nu$. For $\pi_{LQ} \rightarrow c\nu$, the limit is $M_{\rho_{T8}} > 510$ GeV. See their Fig. 2 and Fig. 3 for the exclusion plot in the $M_{\rho_{T8}} - M_{\pi_{LQ}}$ plane.

⁷ AFFOLDER 00L search for top-color Z'_{top} decaying into $\bar{t}t$. The quoted limit is for Z'_{top} with decay width $\Gamma=0.012 M_{Z'}$. For $\Gamma=0.04 M_{Z'}$, the limit becomes 780 GeV.

⁸ ABE 99F search for a new particle X decaying into $b\bar{b}$ in $p\bar{p}$ collisions at $E_{\text{cm}} = 1.8$ TeV. See Fig. 7 in the above Note on “Dynamical Electroweak Symmetry Breaking” for the upper limit on $\sigma(p\bar{p} \rightarrow X) \times B(X \rightarrow b\bar{b})$. ABE 99F also exclude top gluons of width $\Gamma=0.3M$ in the mass interval $280 < M < 670$ GeV, of width $\Gamma=0.5M$ in the mass interval $340 < M < 640$ GeV, and of width $\Gamma=0.7M$ in the mass interval $375 < M < 560$ GeV.

- ⁹ ABE 99H search for the color-octet techni- ρ decaying into a pair of color-triplet technipions which subsequently decay into $\tau+$ jet. See Fig. 6 in the above Note on “Dynamical Electroweak Symmetry Breaking” for the exclusion plot in the $M_{\rho T8} - M_{\pi LQ}$ plane.
- ¹⁰ ABE 99N search for the techni- ω decaying into $\gamma\pi_T$. The technipion is assumed to decay $\pi_T \rightarrow b\bar{b}$. See Fig. 2 in the above Note on “Dynamical Electroweak Symmetry Breaking” for the exclusion plot in the $M_{\omega T} - M_{\pi T}$ plane.
- ¹¹ ABE 97G search for a new particle X decaying into dijets in $p\bar{p}$ collisions at $E_{\text{cm}} = 1.8$ TeV. See Fig. 5 in the above Note on “Dynamical Electroweak Symmetry Breaking” for the upper limit on $\sigma(p\bar{p} \rightarrow X) \times B(X \rightarrow 2j)$.

REFERENCES FOR Technicolor

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ABE	99F	PRL 82 2038	F. Abe <i>et al.</i>	(CDF Collab.)
ABE	99H	PRL 82 3206	F. Abe <i>et al.</i>	(CDF Collab.)
ABE	99N	PRL 83 3124	F. Abe <i>et al.</i>	(CDF Collab.)
ABE	97G	PR D55 R5263	F. Abe <i>et al.</i>	(CDF Collab.)
