

Technicolor

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MASS LIMITS for Resonances in Models of Dynamical Electroweak Symmetry Breaking

<u>VALUE (GeV)</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
>280	95	¹ ABAZOV 07I	D0	$\rho\bar{p} \rightarrow \rho_T / \omega_T \rightarrow W\pi_T$
		² ABULENCIA 05A	CDF	$\rho_T \rightarrow e^+e^-, \mu^+\mu^-$
		³ CHEKANOV 02B	ZEUS	color octet techni- π
>207	95	⁴ ABAZOV 01B	D0	$\rho_T \rightarrow e^+e^-$
none 90–206.7	95	⁵ ABDALLAH 01	DLPH	$e^+e^- \rightarrow \rho_T$
		⁶ AFFOLDER 00F	CDF	color-singlet techni- ρ , $\rho_T \rightarrow W\pi_T, 2\pi_T$
>600	95	⁷ AFFOLDER 00K	CDF	color-octet techni- ρ , $\rho_{T8} \rightarrow 2\pi_{LQ}$
>480	95	⁸ AFFOLDER 00L	CDF	top-color Z'
none 350–440	95	⁹ ABE 99F	CDF	color-octet techni- ρ , $\rho_{T8} \rightarrow \bar{b}b$
		¹⁰ ABE 99H	CDF	color-octet techni- ρ , $\rho_{T8} \rightarrow 2\pi_{LQ}$
>465	95	¹¹ ABE 99N	CDF	techni- ω , $\omega_T \rightarrow \gamma\bar{b}b$
none 260–480	95	¹² ABE 97G	CDF	color-octet techni- ρ , $\rho_{T8} \rightarrow 2\text{jets}$

¹ ABAZOV 07I search for the vector techni-resonances (ρ_T, ω_T) decaying into $W\pi_T$ with $W \rightarrow e\nu$ and $\pi_T \rightarrow b\bar{b}$ or $b\bar{c}$. See their Fig. 2 for the exclusion plot in M_{π_T} - M_{ρ_T} plane.

² 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.

³ CHEKANOV 02B search for color octet techni- π P decaying into dijets in $e p$ collisions. See their Fig. 5 for the limit on $\sigma(ep \rightarrow ePX) \cdot B(P \rightarrow 2j)$.

⁴ ABAZOV 01B searches for vector techni-resonances (ρ_T, ω_T) decaying to e^+e^- . The limit assumes $M_{\rho_T} = M_{\omega_T} < M_{\pi_T} + M_W$.

⁵ The limit is independent of the π_T mass. See their Fig. 9 and Fig. 10 for the exclusion plot in the M_{ρ_T} - M_{π_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.

⁶ 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_{ρ_T} - M_{π_T} plane.

⁷ 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.

⁸ 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.

⁹ 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.
- ¹⁰ ABE 99H search for the color-octet techni- ρ decaying into a pair of color-triplet technipions which subsequently decay into $\tau + \text{jet}$. 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.
- ¹¹ 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.
- ¹² 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 $\sigma(p\bar{p} \rightarrow X) \times B(X \rightarrow 2j)$.

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