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. • • •					
		[1] CHEKANOV	02B	ZEUS	color octet techni-π
>207	95	[2] ABAZOV	01B	D0	$\rho_T \rightarrow e^+ e^-$
none 90–206.7	95	[3] ABDALLAH	01	DLPH	$e^+ e^- \rightarrow \rho_T$
		[4] AFFOLDER	00F	CDF	color-singlet techni-ρ, $\rho_T \rightarrow W \pi_T$, $2\pi_T$
>600	95	[5] AFFOLDER	00K	CDF	color-octet techni-ρ, $\rho_{T8} \rightarrow 2\pi_{LQ}$
>480	95	[6] AFFOLDER	00L	CDF	top-color Z'
none 350–440	95	[7] ABE	99F	CDF	color-octet techni-ρ, $\rho_{T8} \rightarrow \overline{b} b$
>465	95	[8] ABE	99H	CDF	color-octet techni-ρ, $\rho_{T8} \rightarrow 2\pi_{LQ}$
		[9] ABE	99N	CDF	techni-ω, $\omega_T \rightarrow \gamma \overline{b} b$
none 260–480	95	[10] ABE	97G	CDF	color-octet techni-ρ, $\rho_{T8} \rightarrow$ 2jets

[1] 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$(P \rightarrow 2j)$.

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

[3] 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.

[4] AFFOLDER 00F search for ρ_T decaying into $W \pi_T$ or $\pi_T \pi_T$ with $W \rightarrow \ell \nu$ and $\pi_T \rightarrow \overline{b} b$, $\overline{b} c$. 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.

[5] 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.

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

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

[8] 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.

[9] ABE 99N search for the techni-ω decaying into $\gamma\pi_T$. The technipion is assumed to decay $\pi_T \to b\overline{b}$. 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.

[10] ABE 97G search for a new particle X decaying into dijets in $p\overline{p}$ collisions at E_{cm}= 1.8 TeV. See Fig. 5 in the above Note on "Dynamical Electroweak Symmetry Breaking" for the upper limit on $\sigma(p\overline{p} \to X)\times$B$(X \to 2j)$.

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