Technicolor

A REVIEW GOES HERE – Check our WWW List of Reviews

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] ABAZOV	07I	D0	$p\overline{p} \to \rho_T/\omega_T \to W\pi_T$
>280	95	[2] ABULENCIA	05A	CDF	$\rho_T \to e^+e^-, \mu^+\mu^-$
		[3] CHEKANOV	02B	ZEUS	color octet techni-π
>207	95	[4] ABAZOV	01B	D0	$\rho_T \to e^+e^-$
none 90–206.7	95	[5] ABDALLAH	01	DLPH	$e^+e^- \to \rho_T$
		[6] AFFOLDER	00F	CDF	color-singlet techni-ρ, $\rho_T \to W\pi_T, 2\pi_T$
>600	95	[7] AFFOLDER	00K	CDF	color-octet techni-ρ, $\rho_{T8} \to 2\pi_{LQ}$
>480	95	[8] AFFOLDER	00L	CDF	top-color Z'
none 350–440	95	[9] ABE	99F	CDF	color-octet techni-ρ, $\rho_{T8} \to \overline{b}b$
>465	95	[10] ABE	99H	CDF	color-octet techni-ρ, $\rho_{T8} \to 2\pi_{LQ}$
		[11] ABE	99N	CDF	techni-ω, $\omega_T \to \gamma\overline{b}b$
none 260–480	95	[12] ABE	97G	CDF	color-octet techni-ρ, $\rho_{T8} \to$ 2jets

[1] ABAZOV 07I search for the vector techni-resonances (ρ_T, ω_T) decaying into $W\pi_T$ with $W \to e\nu$ and $\pi_T \to b\overline{b}$ or $b\overline{c}$. 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 $p\overline{p}$ 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 ep collisions. See their Fig. 5 for the limit on $\sigma(ep \to ePX)\cdot B(P \to 2j)$.

[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 $W \to \ell\nu$ and $\pi_T \to \overline{b}b$, $\overline{b}c$. See Fig. 1 in the above Note on "Dynamical Electroweak Symmetry Breaking" for the exclusion plot in the $M_{\rho_T} - M_{\pi_T}$ plane.

[7] AFFOLDER 00K search for the ρ_{T8} decaying into $\pi_{LQ}\pi_{LQ}$ with $\pi_{LQ} \to b\nu$. For $\pi_{LQ} \to c\nu$, 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 $\overline{t}t$. 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.

[9] ABE 99F search for a new particle X decaying into $b\overline{b}$ in $p\overline{p}$ 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 $\sigma(p\overline{p} \rightarrow X) \times B(X \rightarrow b\overline{b})$. 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 $\tau +$ 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 $\pi_T \rightarrow b\overline{b}$. 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.

[12] 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 $\sigma(p\overline{p} \rightarrow X) \times B(X \rightarrow 2j)$.

REFERENCES FOR Technicolor

ABAZOV	07I	PRL 98 221801	V.M. Abazov *et al.*	(D0 Collab.)
ABULENCIA	05A	PRL 95 252001	A. Abulencia *et al.*	(CDF Collab.)
CHEKANOV	02B	PL B531 9	S. Chekanov *et al.*	(ZEUS Collab.)
ABAZOV	01B	PRL 87 061802	V.M. Abazov *et al.*	(D0 Collab.)
ABDALLAH	01	EPJ C22 17	J. Abdallah *et al.*	(DELPHI Collab.)
AFFOLDER	00F	PRL 84 1110	T. Affolder *et al.*	(CDF Collab.)
AFFOLDER	00K	PRL 85 2056	T. Affolder *et al.*	(CDF Collab.)
AFFOLDER	00L	PRL 85 2062	T. Affolder *et al.*	(CDF Collab.)
ABE	99F	PRL 82 2038	F. Abe *et al.*	(CDF Collab.)
ABE	99H	PRL 82 3206	F. Abe *et al.*	(CDF Collab.)
ABE	99N	PRL 83 3124	F. Abe *et al.*	(CDF Collab.)
ABE	97G	PR D55 R5263	F. Abe *et al.*	(CDF Collab.)