

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

<sup>1</sup> CHEKANOV 02B search for color octet techni- $\pi$   $P$  decaying into dijets in  $ep$  collisions. See their Fig. 5 for the limit on  $\sigma(ep \rightarrow ePX) \cdot B(P \rightarrow 2j)$ .

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

<sup>3</sup> The limit is independent of the  $\pi_T$  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.

<sup>4</sup> AFFOLDER 00F search for  $\rho_T$  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.

<sup>5</sup> AFFOLDER 00K search for the  $\rho_{T8}$  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.

<sup>6</sup> AFFOLDER 00L search for top-color  $Z'_{\text{top}}$  decaying into  $\bar{t}t$ . The quoted limit is for  $Z'_{\text{top}}$  with decay width  $\Gamma=0.012 M_{Z'}$ . For  $\Gamma=0.04 M_{Z'}$ , the limit becomes 780 GeV.

<sup>7</sup> 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.

<sup>8</sup> ABE 99H search for the color-octet techni- $\rho$  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.

<sup>9</sup> ABE 99N search for the techni- $\omega$  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.

<sup>10</sup> 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  $\sigma(p\bar{p} \rightarrow X) \times \text{B}(X \rightarrow 2j)$ .

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### REFERENCES FOR Technicolor

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ABAZOV	01B	PRL 87 061802	V.M. Abazov <i>et al.</i>	(D0 Collab.)
ABDALLAH	01	EPJ C22 17	J. Abdallah <i>et al.</i>	(DELPHI Collab.)
AFFOLDER	00F	PRL 84 1110	T. Affolder <i>et al.</i>	(CDF Collab.)
AFFOLDER	00K	PRL 85 2056	T. Affolder <i>et al.</i>	(CDF Collab.)
AFFOLDER	00L	PRL 85 2062	T. Affolder <i>et al.</i>	(CDF Collab.)
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.)

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