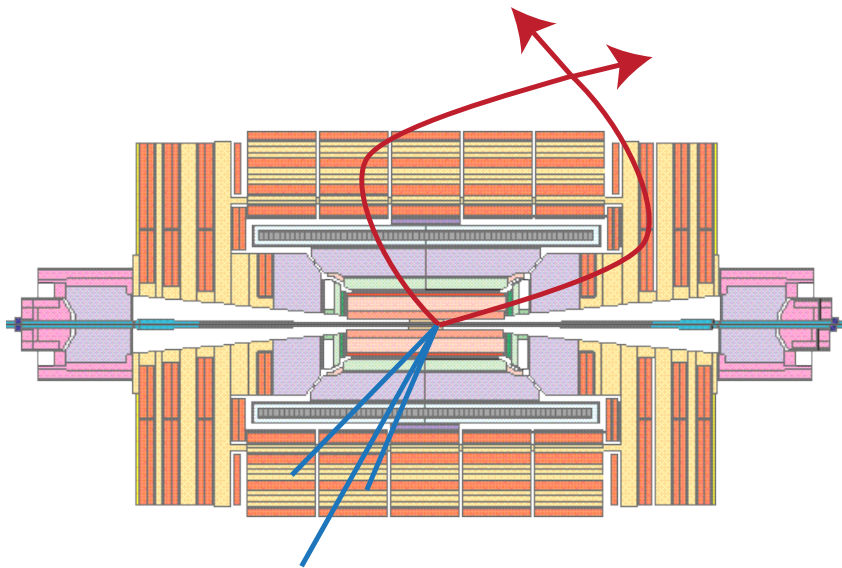# LPC Wrap-Up
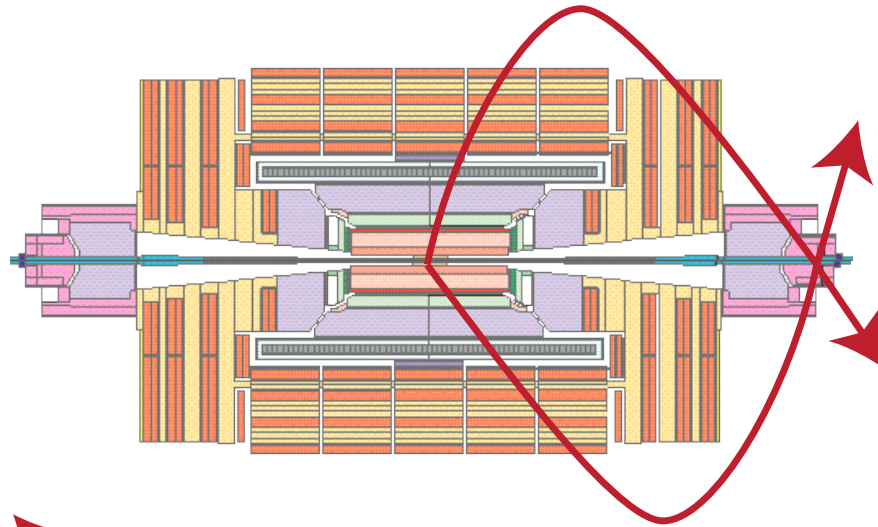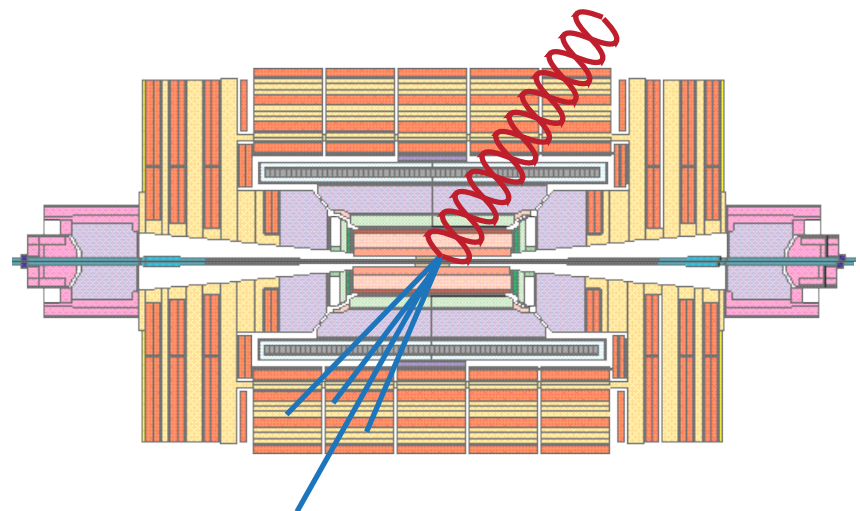
Markus Luty
UC Davis

Thanks!

Quirks + Macroscopic Strings
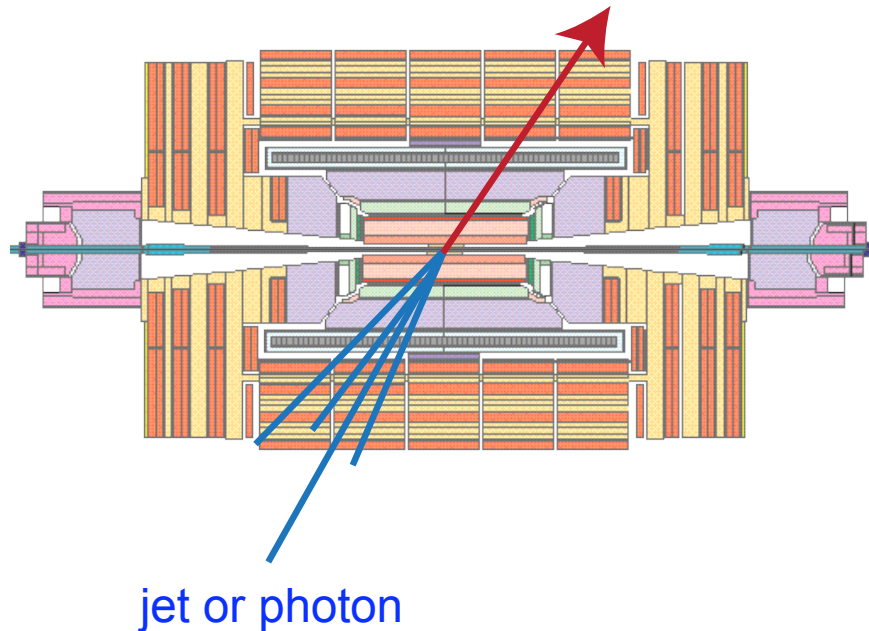

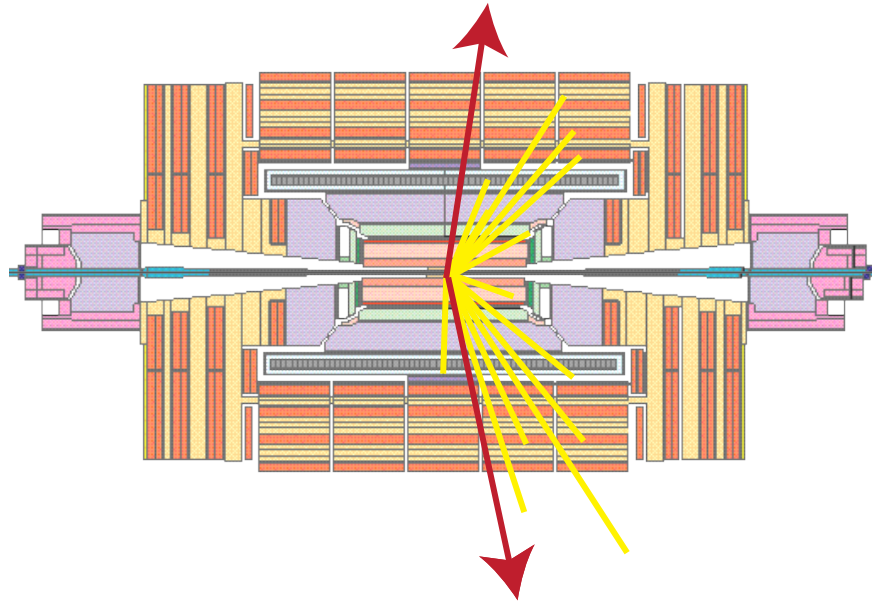jet or photon

jet or photon

Quirks + Mesoscopic Strings

jet or photon

• Quirks appear as singly produced heavy stable particle

• Event-by event mass distribution = 2-particle invariant mass distribution

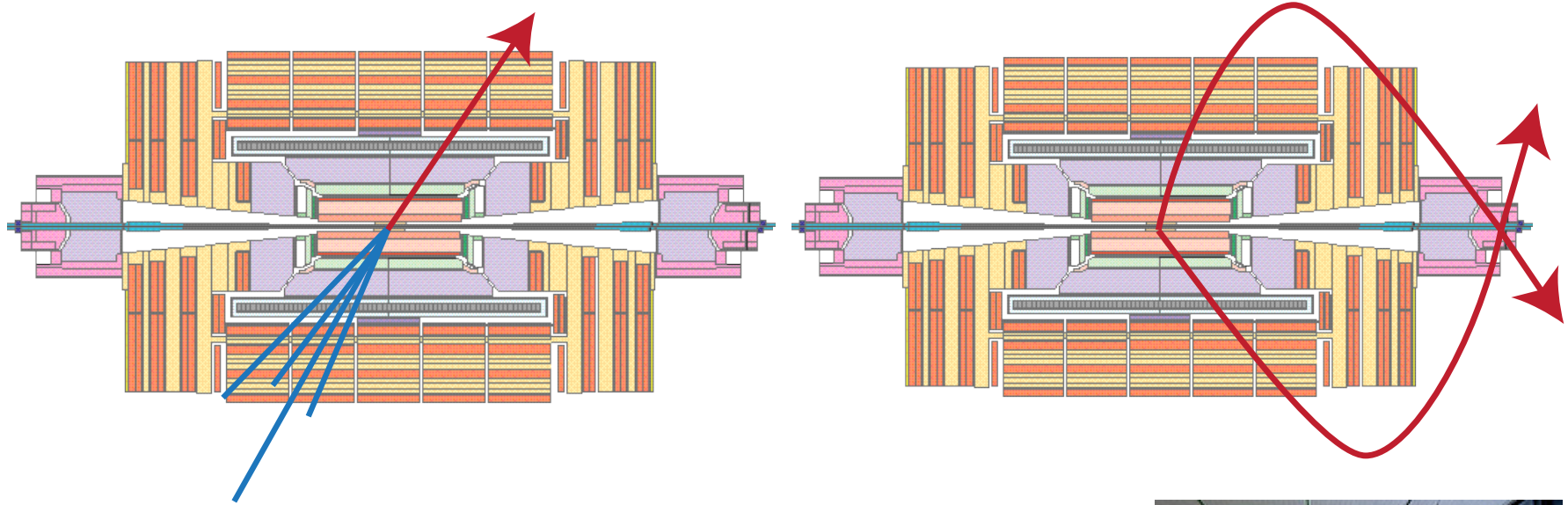# Quirks + Microscopic Strings

- Quirk bound state loses energy to soft (GeV) hadrons
- Energy loss followed by annihilation ("quirkonium")
- 2 jets + "halo"

Quirks @ LPC

• Oleksiy Atramentov (D0/CMS): search for highly ionizing quirky tracks

• Mesoscopic bound state first

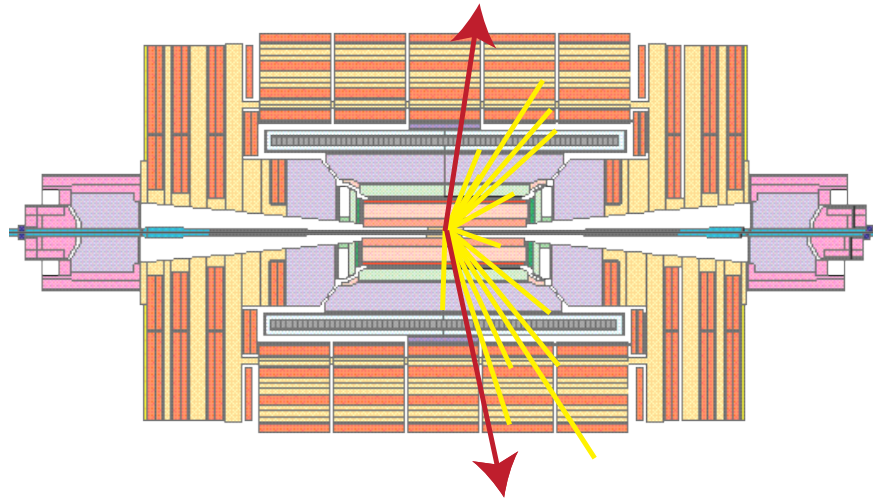• Look at events with large ionization (low velocty, 2 particles, bent path...)

New theory/experiment collaboration!

Fermilab Today 9/21/08

Quirks @ LPC

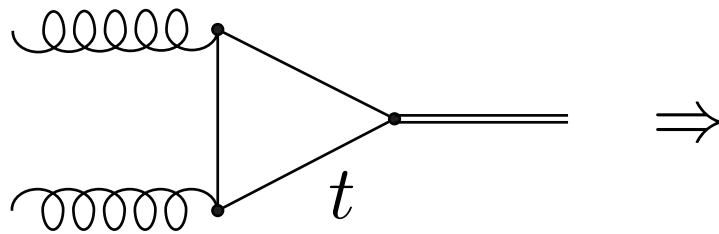- Steve Mrenna: quirk "jet halo" Monte Carlo

- Contacted CDF, D0 exotics groups

- Interest from CMS?

Technicolor 2.0

- Conformal technicolor gives new paradigm for technicolor + elementary top quark

- Practical lattice tests possible

- Minimal conformal technicolor model has light Higgs-like state with $\mathcal{O}(1)$ deviations from SM Higgs couplings

- Expect good EW fit

Technicolor 2.0

- New signals from top couplings

 $\Rightarrow$ singly produced scalar & pseudoscalar resonances

$\sigma \sim \mathrm{pb}$ for TeV resonances

$$\frac{\Gamma(\eta_T \to \bar{t}t)}{m_{\eta_T}} \sim 0.1 \quad \text{(dominant decay)}$$

$$\underbrace{\frac{\Gamma(\eta_T \to W_L W_L W_L W_L)}{m_{\eta_T}} \sim 0.01}$$

10% branching ratio!

Technicolor 2.0 @ LPC

- Presented work in progress; lots to do (for me)

- Boaz Klima: emphasized need for early LHC physics projects for students.

My opinon: not enough work on "non-SUSY" signals

- Light η_T? $\quad m_{\eta_T} \sim \dfrac{\mathrm{TeV}}{N}$ $\qquad N =$ # of technicolors

  - $\bar{t}t$ resonance search
    Also motivated by other models

  - $\eta_T \rightarrow W_L W_L W_L W_L$

    Harder, but more of a "smoking gun"

Please stay tuned and stay in touch!

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