Top quark asymmetries at the LC

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R. P., François Richard

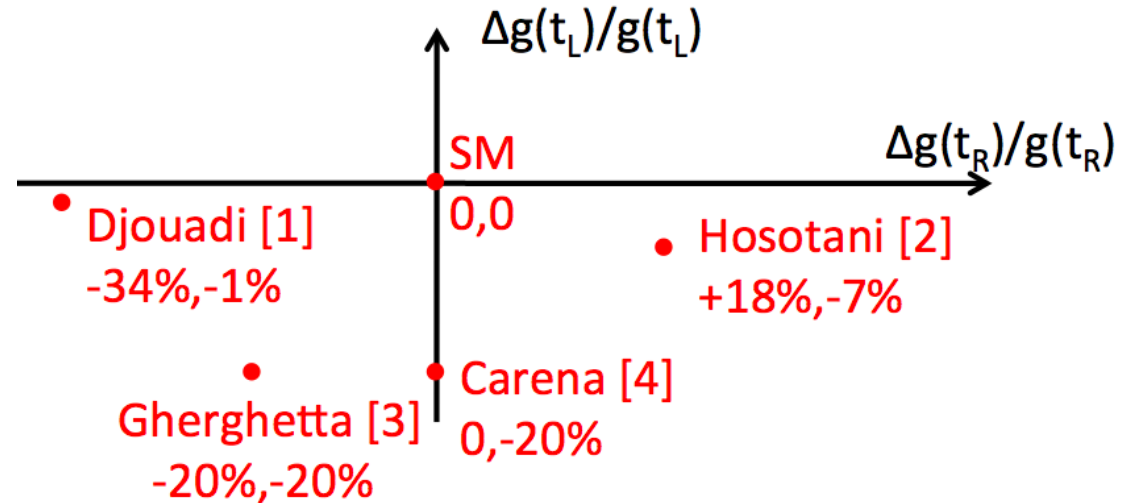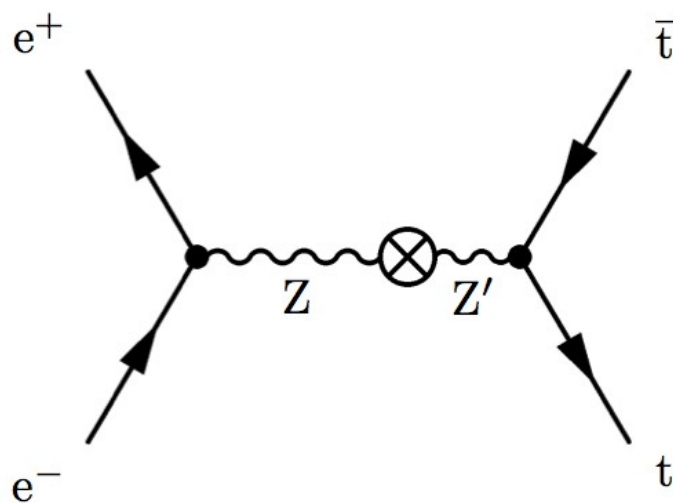+ Thibault Frisson & Jérémy Rouene

Concentrate on 500 GeV studies

Juan Trenado, Ignacio Garcia, Eduardo Ros,
Marcel Vos

Concentrate on 1 TeV studies

Top quark and new physics

New physics modify electroweak couplings to Z

Example: RS models with extra dimensions

- Asymmetries predicted within Standard Model
  New physics modify these asymmetries
  ILC: 'Usual Forward-Backward Asymmetry AFB
      Left-Right asymmetries through polarised beams

Pe- / Pe+ (80% / 0)	ALR	AFBtR	AFBtL		QZtL	QZtR
stat. error	1.3%	1.2 %	1.4 %		1.0 %	1.9 %

Work towards DBD

Three groups: LAL, IFIC Valencia, Univ. De Barcelona

- Testing of ilcsoft v01-13 (DBD release) against existing results, i.e. scrutinising existing results for DBD, succesful first tests

- Study the influence of PFA on the migration effects. What in case of perfect PFA? Can we measure the b-quark charge? If not why and what would be needed? May give directions to R&D beyond DBD

- Alternative jet algorithms

- The hard case: Tame migration effect by reconstruction of charge of b-quarks, Need collaboration with other groups of experts

- Exploiting Ahel if variable turns out to be as robust as expected

- Extension of studies to 1 TeV

- (Naturally) derivation of couplings

Samples for DBD

Agree with proposal to Tim by Mikael

I would suggest to do 500 fb^-1 of ***all* 6 fermions** (ttbar is
anyhow 90% of the six-fermions). This is roughly what was done in
the LOI, and corresponds to around 2Mevents.
It would be nice, but not necessary, if you could group the
channels something like
 ttbar (ie. bbar W W final-state)
    semileptonic
    hadronic
 zzz
    leptonic
    semileptonic
    hadronic
 WWZ
    ditto
 WWWZ or ZZZ (ie. final states that could be either)
    ditto
(the zzz/wwz/... classification is just for completeness, so if
it is complicated for you to do it, just make an "other" class..)

I would prefer using the new one, so that ***all*** modifications wrt.
the LOI is included – machine, generator, reconstruction