Discussion on parton shower accuracy

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(Possible) points for discussion

- criteria and framework to test parton shower accuracy
- how to define observables that can be used to test the accuracy (i.e. how to test at experiments)
- Can we keep the advantages of an angular ordered shower with a dipole shower formulation (with a solid phase space factorization)
- Difference between recoil schemes (global vs local) (e.g. the ISR recoil in Pythia that must be changed to deal with Drell-Yan processes ...)
- How to extend the studies done for FSR to the ISR case.
- How much "wiggle room" can dipole showers have whilst retaining NLL leading colour accuracy? Can we parametrize it and have an handle on th errors?
- Otherc constraints? E.g. the not-log enhanced parts of phase space.

PS: feel free to propose more topics!!

- What do we want from a PS ? How do we formally define its accuracy ?
  - One possibility: define accuracy by requiring to reproduce the QCD squared amplitudes in specific kinematic limits
    - If there's a large hierarchy of scales
      - use logarithmic accuracy ?
    - if there isn't a large hierarchy of scales
      - use standard fixed order counting ?

- **Can we define concrete examples of observables to define and study the perturbative accuracy ?**
  - E.g. predict a given (thrust) distribution with same accuracy everywhere (neglecting $O(\alpha_S)$ corrections)
  - Define an observable / specific kinematic limit considered
  - Possibility to share a common (public) framework for accuracy tests ?
  - Is it possible to run some tests using experimental data ? e.g. Lund plane observables ? Other observables (e.g. at LEP) ?

- What are the handles to access PS uncertainties (recoil / kinematic maps / ordering / scales variations, …) ?
  - logarithmic corrections
  - non logarithmic corrections (how to define accuracy here without matching ?)

- **Can we discriminate among recoil schemes / ordering variable ?**
  - global (how global ?) vs. local schemes
  - ISR vs. FSR case
  - Further theoretical constraints to these choices (e.g. factorisation breaking) ?