

Sherpa status update

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14 January 2010, CERN



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Status

- Announced that 1.2 will be a non-complete, early version \Rightarrow **NOT TRUE ANYMORE!**
We decided to take the time and make it a full-featured version
- Full-featured version with good documentation, many examples provided
- Many improvements in perturbative physics
- No major syntax change
- Recommended version for all types of studies

New features

- New ME generator for high multiplicities: COMIX
- New default parton shower based on Catani-Seymour subtraction terms: CSSHOWER++
- Improved merging procedure including truncated showering [arXiv:0903.1219](https://arxiv.org/abs/0903.1219)
- Automated generation of Catani-Seymour dipole subtraction terms
 \Rightarrow Interface for one-loop amplitudes
- FeynRules interface
- Hidden Valley parton shower
- YFS for hard leptons
- Rivet interface

QCD dipole subtraction (Tanju Gleisberg)

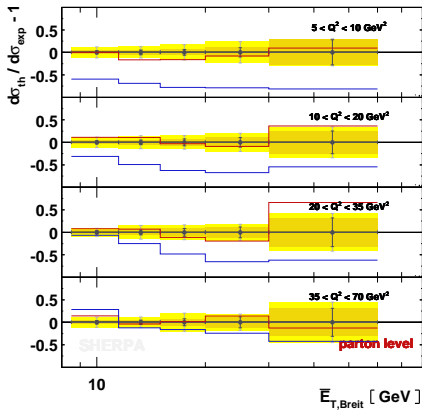
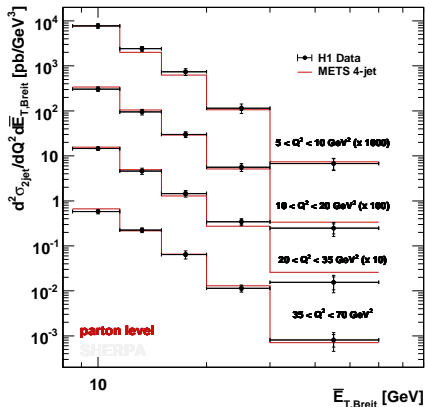
- Used for several ME-level NLO publications, e.g.
 - W+jets (Phys.Rev.Lett.102:222001,2009, Phys.Rev.D80:074036,2009)
 - ZZ+jet (arXiv:0911.3181)
 - Z+jets (arXiv:0912.4927)
- Extension to massive particles being validated currently

EW dipole subtraction (Jennifer Archibald)

- Extending AMEGIC++'s implementation of Catani-Seymour subtraction to EW case
- First processes are working

DIS with Sherpa (Stefan Höche) arXiv:0912.3715

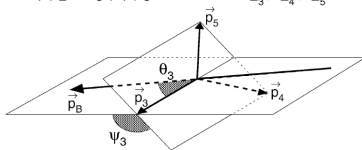
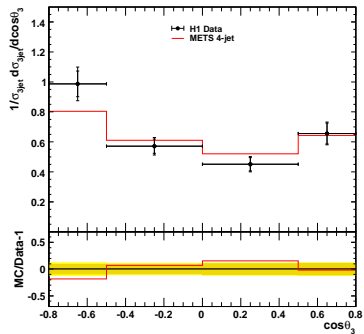
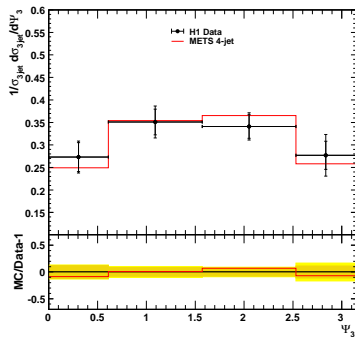
- ME+PS merging works well with dynamic choice of Q_{cut}
- Multi-jet merging crucial for description of low Q^2 data
- Especially dynamical definition of core proc in backwards clustering necessary
- Results:

$\bar{E}_{T,Breit}$ spectra EPJC19(2001)289 low- Q^2
 ME \otimes PS vs. parton shower


three-jet center-of-mass frame:

$$1 + 2 \rightarrow 3 + 4 + 5$$

$$E_3 > E_4 > E_5$$

 $\cos \theta_3$ PLB515(2001)17 $Q^2 > 150 \text{ GeV}^2$  Ψ_3 PLB515(2001)17 $Q^2 > 150 \text{ GeV}^2$ 

Inclusive hard decays (Stefan Höche, Steffen Schumann, Frank Siegert)

- Automation of all possible decay channels from Feynman rules
- COMIX building blocks for amplitudes
- Works for SM, working on BSM

Minimum bias and UE (Frank Krauss and Korinna Zapp)

- → talk by Korinna

Radiative Corrections to Semileptonic Meson Decays (Marek Schönherr)

- → talk by Marek

Hard photon production + merging (Stefan Höche, Steffen Schumann, FS)

- → talk by FS