Lisbon Accord

Goal: convert this document to a format for arXiv

1. The 'Lisbon accord'

The discussion was framed by rather generic guiding principles:

(i) that there is a need to guarantee appropriate legacy of HI experimental results;

(ii) that there is a need to have a framework through which theory (most importantly in the form of HI event generators) can be fairly confronted with data;

(iii) that such a validation/comparison framework should be as automated as possible;

(iv) that, to the largest possible extent, standards/codes/procedures used for pp physics should be adopted;

(v) that the framework should be public (that includes codes and analyses scripts)

Those present showed overwhelming support for the generic principles above and the discussion can now shift from the 'should this be done' stage to the specifics of 'how to do it'.

2. Some specifics (which I believe were consensual)

(i) a medium-long term plan should be to fulfill the guiding principles for ALL HI analyses. However, initial efforts should focus on jet physics;

(ii) the existing nPDF parametrizations should be available as part of LHAPDF6. From the discussion it became clear that this should be a rather straightforward exercise. Carlos Salgado (carlos.salgado@usc.es) commited to nominate a volunteer from the nPDF community to assist LHAPDF in the necessary steps;

(iii) RIVET is a suitable backbone to implement 1;

(iv) RIVET does not, at present, offer all functionalities needed in the HI context;

(v) Jet MCs should be able to be run effortlessly; (i) developers should provide as soon as possible a running 'tune' of their MC; (ii) output should be given in HEPMC format; (iii) jet MC should allow for running in diverse background configurations provided in common form (OSCAR??)

(vi) since no full event generators are available at present, a standard (set of) procedure(s) for embedding of jet MC results into UE (for subsequent processing consistent with experimental procedure) should be agreed on

3. NEXT STEPS (TODO LIST)

3.1 As soon as possible (RIVET validation in HI)

(i) MC developers provide as soon as possible a running 'tune' of their MC

(ii) output should be given in HEPMC format (current HEPMC 2 header for HI not optimal): need input on what should be included as fix to HEPMC 2

and, IMPORTANTLY, what should go in HEPMC 3 (currently under development: it is the right time to get what we want/need). A rather pressing issue is to decide on a numbering convention fro particles in the event record. Korinna will be at the MCnet school in August and can discuss the HI issues with the people there. IT IS CRITICAL TO HAVE INPUT ON HEADER DEFINITION AND NUMBERING SCHEME BY THEN

(iii) experiments name contact persons

(iv) Experiments provide trial RIVET analysis (start with simpler analyses, eg those with background subtracted jets) as part of validation of RIVET :: I suggest that the choice of first RIVET analysis is agreed amongst MC authors and 3 experiments. This could procees as follows: small group with representatives of each experiment plus theory people to sit together and implement first analyses agreeing on coding conventions. These analyses will then be validated by the RIVET people in collaboration with the HI group.

3.2 Short-term

(i) jet MC should allow for running in diverse background configurations provided in common form to be agreed on (OSCAR would be an obvious choice, but a decision has to be made)

(ii) identify list of missing capabilities in current RIVET (correlation analyses, multi-thread (ratio) analyses) and how to circunvent and implement

(iii) properly assess possibility for HI experimental results to be provided at particle level (ideally unfolded for detector response, but not background subtracted) :: whether possible at all, if possible for some specific analyses, ...

(iv) when above not possible, define standard for 'final product' experimental results and how corresponding treatment for generated events should proceed

(v) define (alongside iv above) procedure for jet embedding in realistic background/UE

4. Logistics

(i) a mailing list, extending beyond those present at the Lisbon workshop, will be set up (NEED A VOLUNTEER)

(ii) Korinna Zapp (korinna.christine.zapp@cern.ch) has offered to act, for the time being, as the interface between HI community and HEPMC/RIVET/LHAPDF.

(iii) we need to decide if and when we are in a position to try to use MCnet short-term studentships for RIVET implementation, and any other HI MC project

(iv) at this point I believe it makes sense to formalize these jet workshops. Christof Roland raised the possibility of setting up a 'working group' and as such have support for regular workshops. I (very informally) talked to Michelangelo Mangano as to whether such a working group could eventually be established within the LPCC. For that to happen (and to access their logistic help) we would need demonstrable showing of interest from people within the experimental collaborations to get the process started. THIS IS SOMETHING THAT I SEE AS HAVING A PRIORITY NEED FOR DECISION (we need to clearly see that we are ready). What we want to do fits exactly with what LPCC working groups are for.

5. Additional information (thanks to Korinna)

**RIVET
http://rivet.hepforge.org

**LHAPDF
http://lhapdf.hepforge.org

**HEPMC
http://lcgapp.cern.ch/project/simu/HepMC/

**MCnet
http://www.montecarlonet.org

**OSCAR
https://karman.physics.purdue.edu/OSCAR/index.php/BJ_HYDRO,
https://wiki.bnl.gov/TECHQM/index.php/OSCAR_Standard_Output_Format_for_Hydro_Codes

attached files:

* HEPMC2 event record description

* PDG numbering scheme for MC