

Combining HZTool with Rivet - First Ideas

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Introduction

I just started with a summerstudent to write a Rivet analysis for multijet production at HERA - H1 analysis to be published soon

When looking for examples we saw that there are hardly any HERA analyses present in Rivet

Andy Buckley (Rivet):

“We'd really like to have more analyses from HERA, but the attempt to encourage conversion of the main HZTOOL HERA analyses never got anywhere. We don't have enough HERA expertise, or manpower in general, to do this ourselves, so we're very grateful if you or other HERA-oriented people can supply them.”

How can we make all the HZTool analyses usable in Rivet?

Idea Number 1

Running Rivet on HepMC events is easy:

```
rivet -a H1_2000_S4129130 Sherpa_1Mevents.hepmc2g
```

→ Rivet.aida → plots

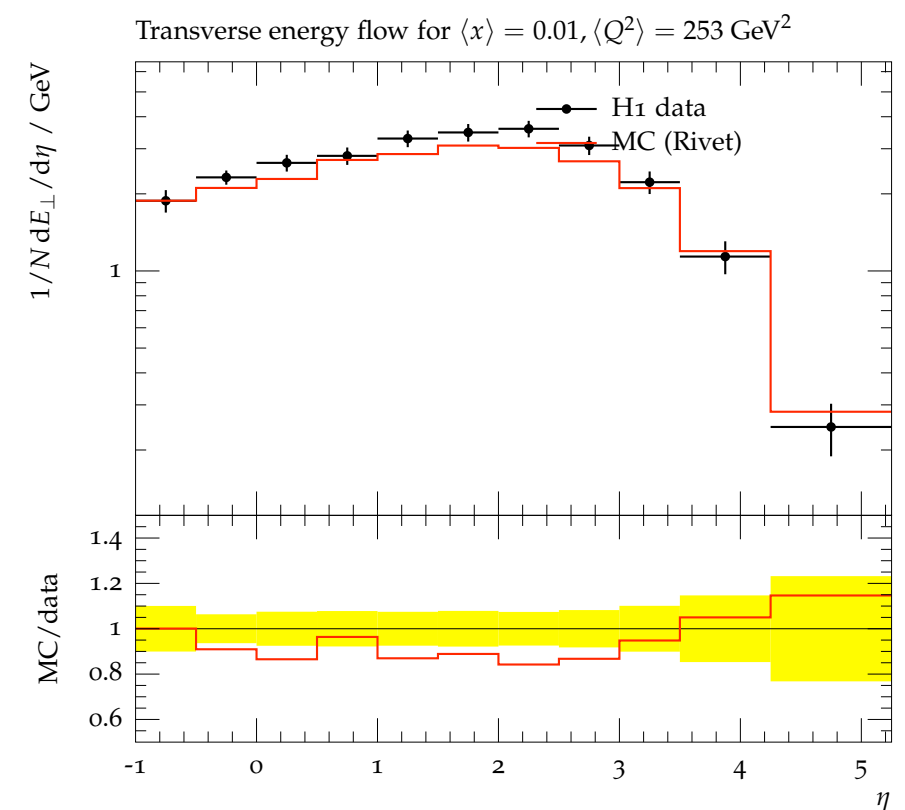
What about a conversion of the HepMC file, then start the usual HZTool analysis?

Advantage:

- very little work - only conversion from HepMC to HEPEVT needed

Disadvantage:

- HepMC have to be written to file
- User needs to know fortran, paw and HZTool syntax



Idea Number 2

HZTool already exists as package of libraries

Is it possible to wrap them and call them inside Rivet?

Basic idea (Albert):

```
class H1_1994_S2919893 : public Analysis {
public:

    /// Constructor
    H1_1994_S2919893() : Analysis("H1_1994_S2919893")
    { setBeams(ELECTRON, PROTON); }

    void init() {
        _hz00166(1);
    }

    void analyze(const Event& event) {
        hepmc2hepevt(event);
        _hz00166(2);
    }

    void finalize() {
        hz00166(3);
        converthbookfile2aidafile(?);
    }
}
```

only one wrapper per
analysis needed

conversion of HepMC to
HEPEVT, no way around it
needs to fill the common
block

hbook → aida needed?
(could do h2root, root2flat,
flat2aida, but not nice)

Idea Number 2

Advantage:

- more elegant solution, interface transparent to the user
- usage of Rivet's plotting tools, no paw needed anymore

Disadvantage:

- more work
- conversion from HepMC to HEPEVT still needed
- one analysis class per HZTool analysis needed - but this could be handled by a code generator

Summary

Which strategy should we follow?

Will a HZTool and Rivet combination be useful / used?

Ideas from experts are very much appreciated
before starting to code

Worth mentioning:

The newest HERA routines in HZTool are DESY-08-210 and DESY-06-240, all others are more than 5 years old

Where did all the new measurements from HERA go?