

HZTool and Rivet: Toolkit and Framework for the Comparison of Simulated Final States and Data at Colliders

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A common problem in particle physics is the requirement to reproduce comparisons between data and theory when the theory is a (general purpose) Monte Carlo simulation and the data are measurements of final state observables in high energy collisions. The complexity of the experiments, the observables and the models all contribute to making this a highly non-trivial task.

We describe an existing library of Fortran routines, HZTool, which enables, for each measurement of interest, a comparable prediction to be produced from any given Monte Carlo generator. The HZTool library is being maintained by CEDAR, with subroutines for various measurements contributed by a number of authors within and outside the CEDAR collaboration.

We also describe the outline design and current status of a replacement for HZTool, to be called Rivet (Robust Independent Validation of Experiment and Theory). This will use an object-oriented design, implemented in C++, together with standard interfaces (such as HepMC and AIDA) to make the new framework more flexible and extensible than the Fortran HZTool.

Primary authors: Dr BUCKLEY, Andy (Durham University); Dr WAUGH, Ben (University College London); Dr NURSE, Emily (University College London); Dr JUNG, Hannes (DESY); Prof. BUTTERWORTH, Jonathan (University College London); Dr LONNBLAD, Leif (Lund University)

Presenter: Dr WAUGH, Ben (University College London)

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