LCFIPlus

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LCFIPlus is part of iLCSoft - software packages developed for the International Linear Collider (ILC). It is designed to perform vertex finding, jet finding, and flavor tagging. It is implemented as a Marlin processor with flexible configuration via the XML steering file.

How to obtain LCFIPlus

The LCFIPlus package is included in the ILCSoft release.

The latest version can be downloaded from the DESY SVN repository:

```
svn co https://svnsrv.desy.de/public/marlinreco/LCFIPlus/trunk LCFIPlus
```

June 8, 2012: The latest tag is available:

```
https://svnsrv.desy.de/public/marlinreco/LCFIPlus/branches/v00-05-pre-02
```

To use flavor tagging with LCFIPlus, one needs to use weight files and Marlin steer files with matching information.

Weights files created with ILD simulation and the corresponding steer file examples can be downloaded from the LCFIPlusConfig package. The README file is the starting point and can be browsed online.

To obtain weight files with SiD simulation, please contact Jan Strube.

Reporting issues

The recommended way to report bugs and issues is through the JIRA issue tracker. A confluence account will be needed for this.

https://jira.slac.stanford.edu/browse/LCFI

The contact persons for the detector groups are:

- ILD: Tomohiko Tanabe (tomohiko AT icepp.s.u-tokyo.ac DOT jp), Taikan Suehara (suehara AT epx.phys.tohoku.ac DOT jp)
- SiD and CLIC: Jan Strube (jan.strube AT pnnl DOT gov)

Discussions about the package happen on the mailing list `lcfi-vertex AT desy DOT de`. To subscribe, follow this link: https://lists.desy.de/sympa/info/lcfi-vertex

Build Instructions

This is a basic configuration for building LCFIPlus using the ilcinstall tool.

```
ilcsoft.install( MarlinPKG( "LCFIPlus", LCFIPlus_version ))
ilcsoft.module("LCFIPlus").download.root="marlinreco"
ilcsoft.module("LCFIPlus").addDependency( [ 'LCIO', 'GEAR', 'ROOT', 'Marlin', 'MarlinUtil', 'LCFIVertex'] )
```

FIXME: Dependencies

Proper way to install all the package's ROOT-based dependencies???

```
Minuit2 TMVA TreePlayer Gui Geom Eve Minuit XMLIO RGL Ged EG MLP
```

Algorithms

LCFIPlus contains the following algorithms:

- PrimaryVertexFinder - searches for the primary vertex
- BuildUpVertex - searches secondary vertices
- JetClustering - jet clustering using vertex information
- JetVertexRefiner - performs refitting and re-association of vertex tracks
- FlavorTag - prepares of flavor tagging input variables
- MakeNtuple - produces ROOT files containing ntuples for training
- TrainMVA - performs TMVA training

- ReadMVA - applies result of training

LCFIPlus Examples
LCFIPlus Variables