

# Status of LCFIVertex

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# software framework

- motivation
  - new variables, new multivariate techniques
  - requirements from physics: multi-jet processes (ZHH, ttH) + high energy environment (e.g. CLIC)
- implementation:
  - Marlin processor
    - takes as input PandoraPFOs
    - outputs jets, vertices (primary/secondary), flavor tags (as PIDHandlers)
  - dedicated data types for jet clustering & flavor tagging
  - modular design, flexibility in combining algorithms
  - control via xml steering file

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| Task                     | Status         |
|--------------------------|----------------|
| Marlin interface         | done           |
| Primary vertex finder    | done           |
| Secondary vertex finder  | done           |
| Flavor tagging variables | done           |
| TMVA interface           | done           |
| Documentation            | in progress... |

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computing intensive: should be done with mass production!

Name of package: LCFIPlus

<https://svnsrv.desy.de/public/marlinreco/LCFIPlus/tags/v00-01>

# steering files

- example steering files are available in SVN “steer” directory
  - vertex.xml: primary vertex + secondary vertex only
  - makentuple.xml: prepares ntuple (.root) files for training
  - train.xml: does training via TMVA
  - analysis.xml: example analysis code using results of TMVA
- result of TMVA training is ~10 MB compressed
  - need for a repository for sharing training files

# open issues

- documentation!
- distribution of weight files
- dependencies of ROOT libraries (in MARLIN\_DLL...)
- fix memory leaks & yet uncovered bugs
- normalization of input & output variables in flavor tagging