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# Introduction

DaVinci is the LHCb Analysis software, built on the Gaudi Framework.

## Coordinators

The DaVinci release manager is Eduardo Rodrigues. The list of packages and coordinators is [here](#).

## DaVinci Web

The main DaVinci web page containing release information and links to user guides, is [here](#).

# Documentation

## FAQ

- See LHCb FAQ sub web
  - ◆ DaVinci FAQ
- Decay descriptor language documentation
- DaVinciConfigurable : Python options for text options users
- TupleToolsAndConfigurables : Quick-reference of how to use configurables, specifically to understand TupleTool configurations.

There are many tutorials for self-teaching. They are also used at the various tutorial sessions. See [DaVinciTutorial](#).

## Reference Wiki pages and notes

- Stripping framework implementation based on Lines.
- Particle selection toolkit.
- LHCb stripping page.
- MicroDST writing and reading.
- Recommended data base tags
- Vertex fitters
- Flavour tagging
- Global particle ID
- PIDCalib package
- Particle to Monte Carlo truth association
- Particle to primary vertex association
- Primary vertex re-fitting
- Association of Particles and Primary Vertices and Switching between On- and Offline Contexts in DaVinci [↗](#)
- How to access the Monte Carlo Truth information for the Reconstructed Primary Vertices?
- Commonly used LoKi::Hybrid::Filters.
- Documentation related to TisTossing L0, Hlt1 and Hlt2 triggers
- Pileup Rescaling how to use the tools to resample/weight events to simulate different pileup conditions

## Bug report

Please use the LHCb Savannah Portal [↗](#) under category "Analysis"

## New developments

This is a list of some new and significant developments that haven't been presented or documented very much:

- DecayTreeFitter, by Wouter H.
  - ◆ "tool"-based preliminary version of this fitter is available for tests from 26.May.2k+10, the corresponding LoKi/Bender functors will appear just after.
- Fixes to Selection "Framework" to allow using AutomaticData (or DataOnDemand) Selections to write Micro or selection DSTs (meaning these objects really behave like Selections now.)
- MultiSelectionSequence, SelectionSequence class with OR of SelectionSequences.
- Pure-python ntuple and 1D histogram. I haven't advertised it widely because I haven't finished the functions to represent these entities graphically.
- Use of Particle::Selection everywhere has been enabled (and set to default for FilterDesktop)
  - ◆ Unfortunately LHCb::Particle::Selection class has no Reflex dictionaries, and thus can't be used in Python **now**, see bug [@66973](#) [↗](#) [↗](#)
- More restricted scope for FilterDesktop (got rid of all the CloneTrees and similar options)
- Vanya's new Particle FilterInTrees algorithm, hasn't been presented anywhere but could be useful, specially for people using the weird obsoleted functions of FilterDesktop
- A bunch of useful GaudiPython stuff in AnalysisPython. Listing of DST contents. Histogram plotting (old stuff from Vanya, but not regularly used)
- Scripts to explore contents of DSTs in `Phys/DSTWriterTests` (uses the above)
- Vanya's python way of using the LHCbMath geometry stuff.
- "New" decay finders
- "mcMatch" functors for CombineParticles/FilterDesktop/TupleTool frameworks
- New functors **CONTAINS, EXISTS, ...** for "Void"-filters, that allows to fast event filtering based on some event characteristic.
- Event Tuple Tool : hybrid tuple-tool to deal with L0/HLT/ODIN and void-functors
- ASCII representation of histograms (it is VERY convenient e.g. for log-files)
- New DaVinci particle filtering functions in DaVinciKernel
- New IParticleFilter interface. Examples of how to use with LoKi cuts? Probably unnecessary, except for custom-made C++ particle-filtering algorithms.
- New algorithm `FitDecayTrees` to refit the decay trees using `DecayTreeFitter::Fitter` utility by wouter Hulsbergen

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-- Vanya Belyaev - 10-Jul-2k+10 -- Vanya Belyaev - 26-May-2010 -- Juan Palacios - 12 Jun 2009 -- Vanya BELYAEV - 17 May 2008 -- PatrickKoppenburg - 20 Jun 2008

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