Top Physics and Analysis Tools

TopView/EventView update

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UK Top Physics WG Meeting

Analysis Options in Athena

Analysis with Athena

1. CBNT. Now Athena Aware but basically the same thing.
2. Copy AOD into ntuples. Analysis on ntuples. Due to AOD speed/complexity. "Why make AOD?"
3. Direct analysis on AOD. Some tools to manipulate AOD objects. Organize and implement analysis in C++. Eg SUSYPhys or BPhys.
4. EventView for manipulating AOD objects. EV helps organize analysis. Write your own EV tools/algs in C++.
5. Modular analysis with EventView Builder Toolkit. Most analysis task via generalized tools configured in python. Write your own tool when necessary.
6. Use advanced configuration methods and construct EV python modules.

PAT Japan Meeting

One week of tutorial and discussion including 4-hour `EventView` tutorial. EVTutorial introduced new python configuration facility. Request to organize python tutorial session/documents...

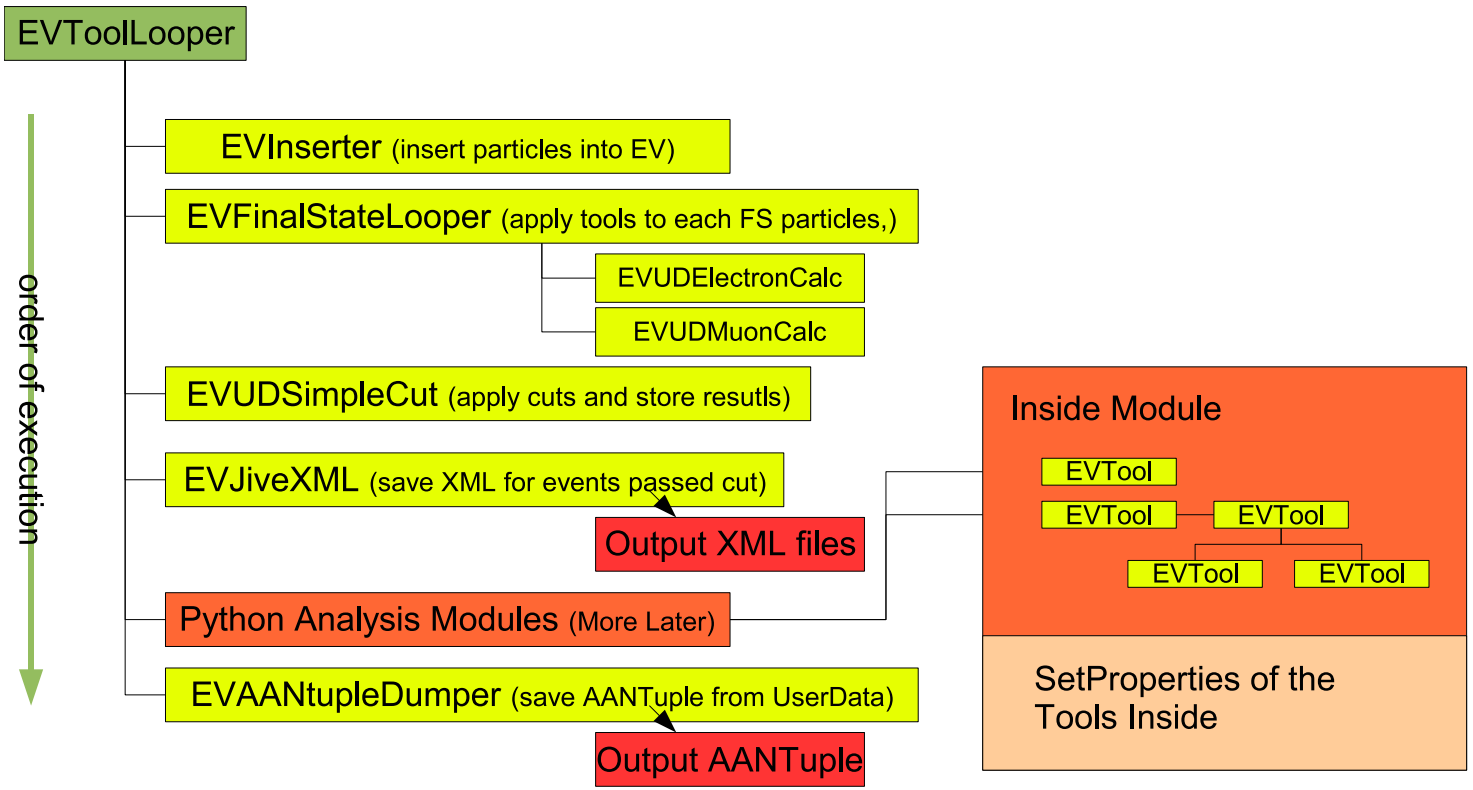
Discussion topic included:

- Saving `Athena` objects (Electron, Muon etc) into root ntuple.
- Problems with `INavigable4Momentum`.
- Making AOD and ESD interface the same.

EventView Status

1. EventView core is stable for sometime - minor debugging only.
2. Large amount of development in EventView Builder tool kit in 11.0.x branch (Combiners, Transformations, Inserters, Truth Selectors etc.)
3. Now migrating into 12.0.x and testing.
4. Python module capability provided by EentViewConfiguration. Now stable and testing.
5. Memory leak and speed issues with UserData are looked into.

EventView/TopView



- Python config stuff included in TopView has been moved into `EventViewConfiguration` package.
- `EventViewConfiguration` supports various features for high level configuration using python modules.

Physics View Package

Introduced with the aim of providing...

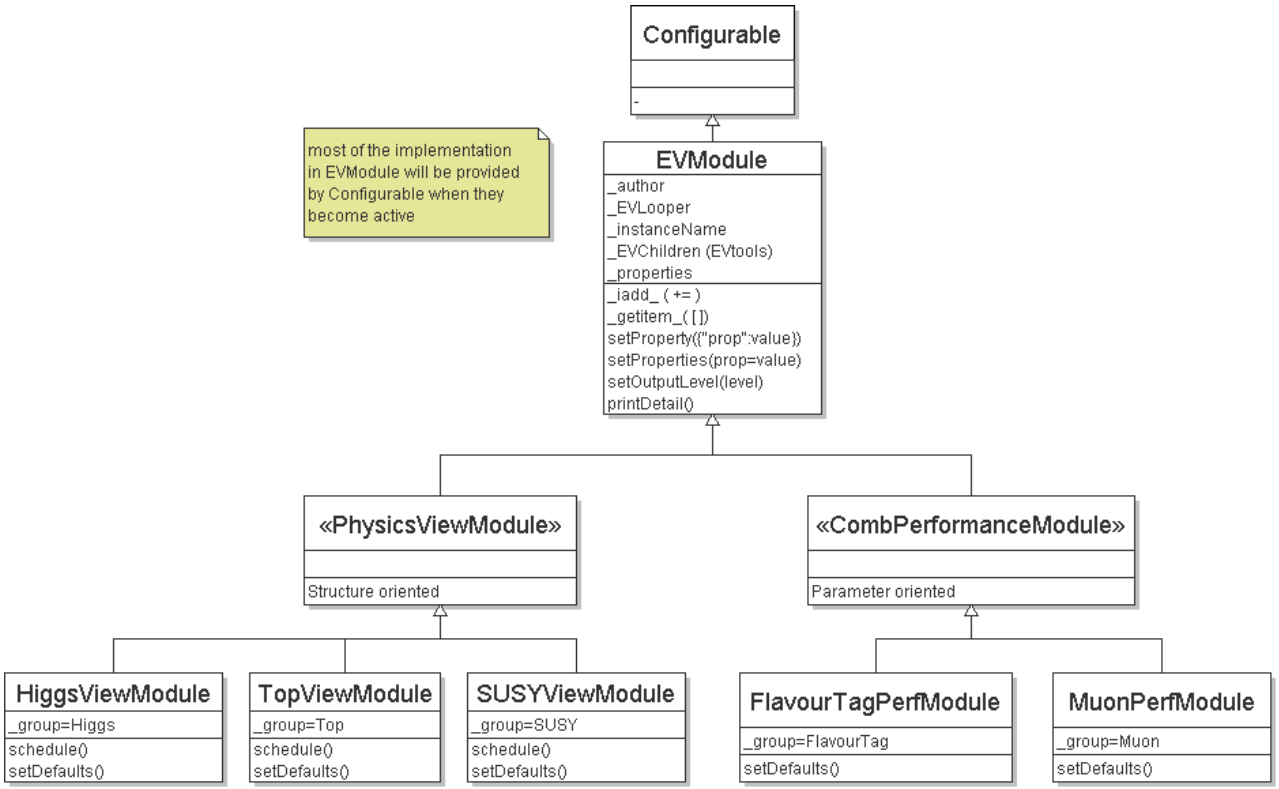
- Good starting points to new users of EV by giving specific examples.
- Use of EVModules so that people from other physics group can plug them into their own analysis. (TopReco tool used in $t\bar{t}H$ etc)
- Common ground for everyone to publish their analysis as modules that can be shared and compared.

Currently available:

PhysicsAnalysis/TopPhys/TopView
PhysicsAnalysis/SusyPhys/SusyView

and interests shown to implement others.

Analysis Communication Using EV Modules



Modules can be shared/exchanged for useful tasks (eg reconstruction) and parameters (eg calibration).

Feedback on TopView?

- TopView is providing useful application of EventView tools.
- Some users have started playing around. eg, how to do ttbar rec without b-tagging? (A. Dotti)
- More python codes into the package (as it was inteded) and somewhat intimidating to users. (PAT Japan)
- Documentation and examples are assuming lxplus and more support is needed for running on kit or running on the Grid. (W. Murray)
- Interests in writing other PhysicsView packages. (J. Catmore)
- Trigger-aware analysis? (J. Thomas)

Future plan

My Plan:

- Bring all the `EventViewBuilder` tools into usable state in 12.0.x and test with CSC samples.
- Start working for my thesis! - Going back to Single Top analysis using `EventView` with CSC samples.

EventView Plan:

- Trigger-aware analysis tools (Inserter for trigger obj. and calclator for trigger var.)
- Overlap removal using association map.
- Improvements in Dumpers, calculators for complex objects (saving ROOT vector objects rather than values of px, py etc.)