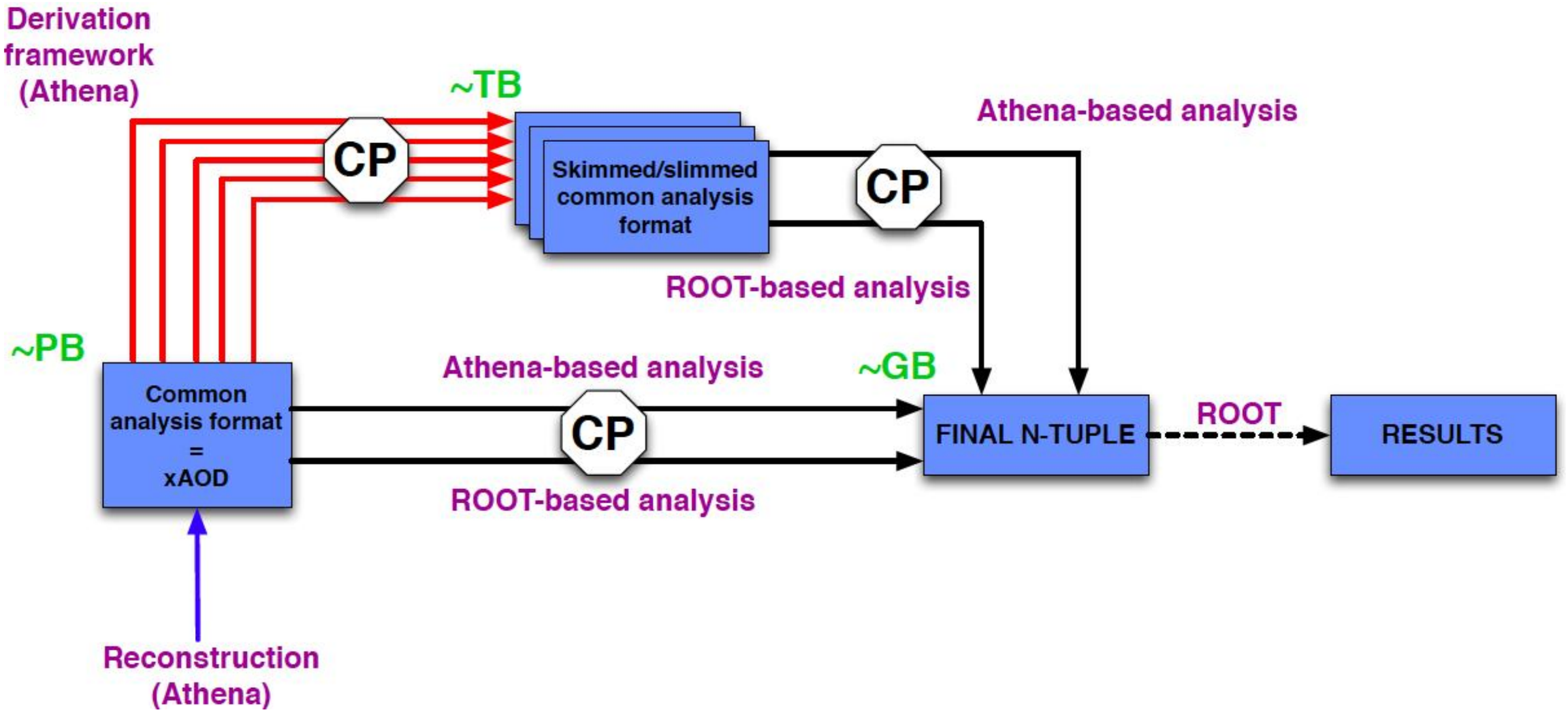
Analysis Overview

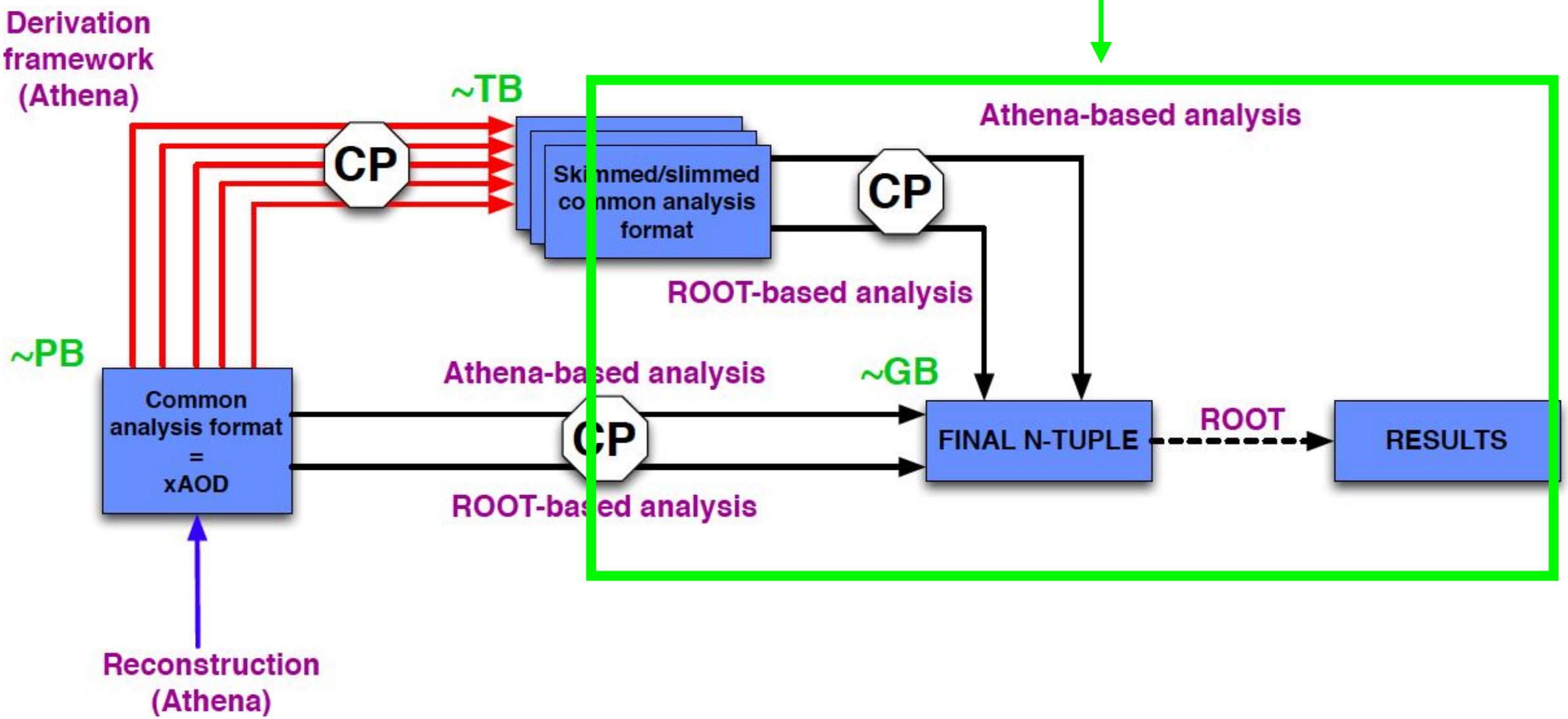
Nils Krumnack (Iowa State University)

Analysis Workflow

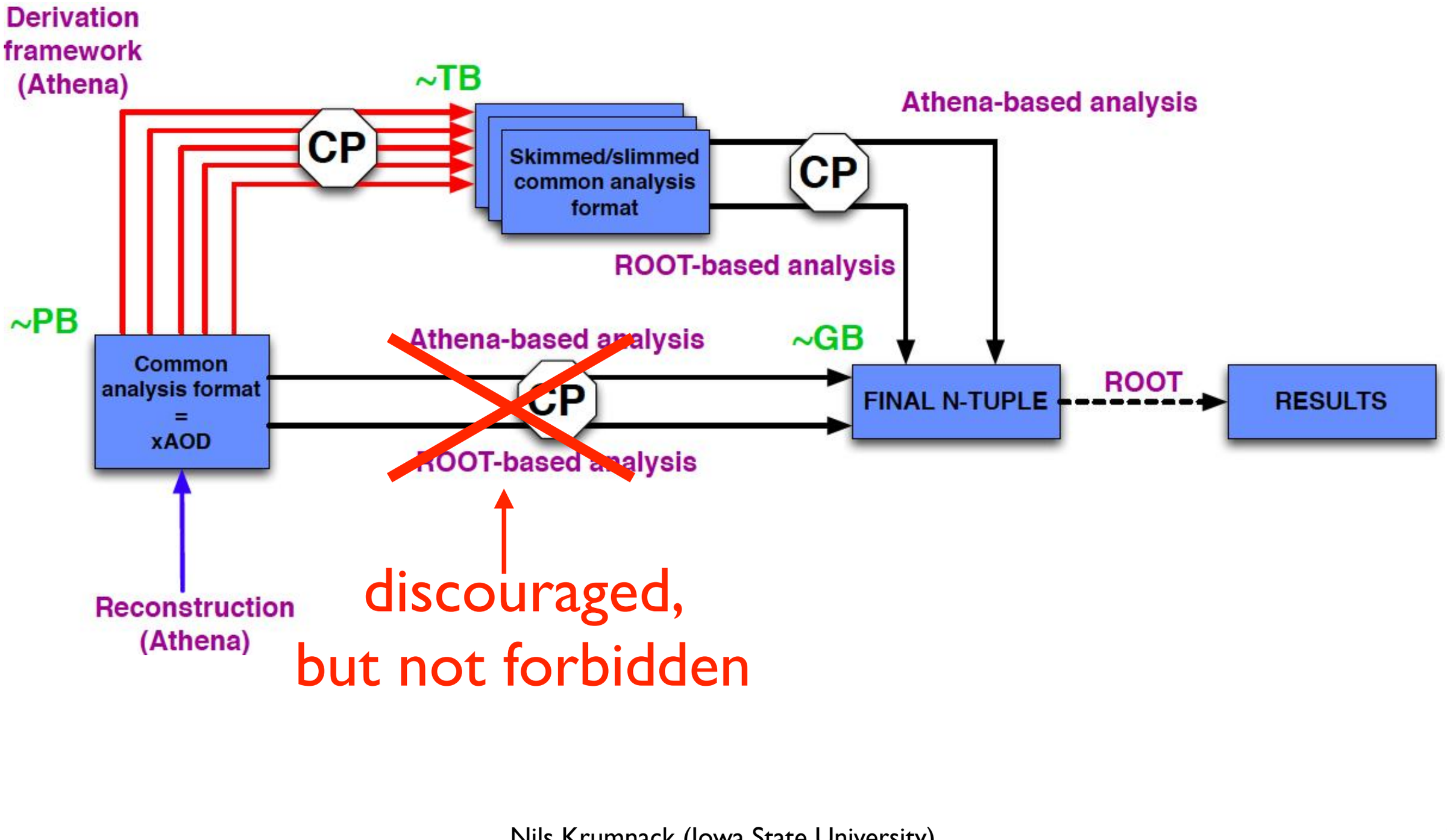


Analysis Workflow

this is where analysis happens

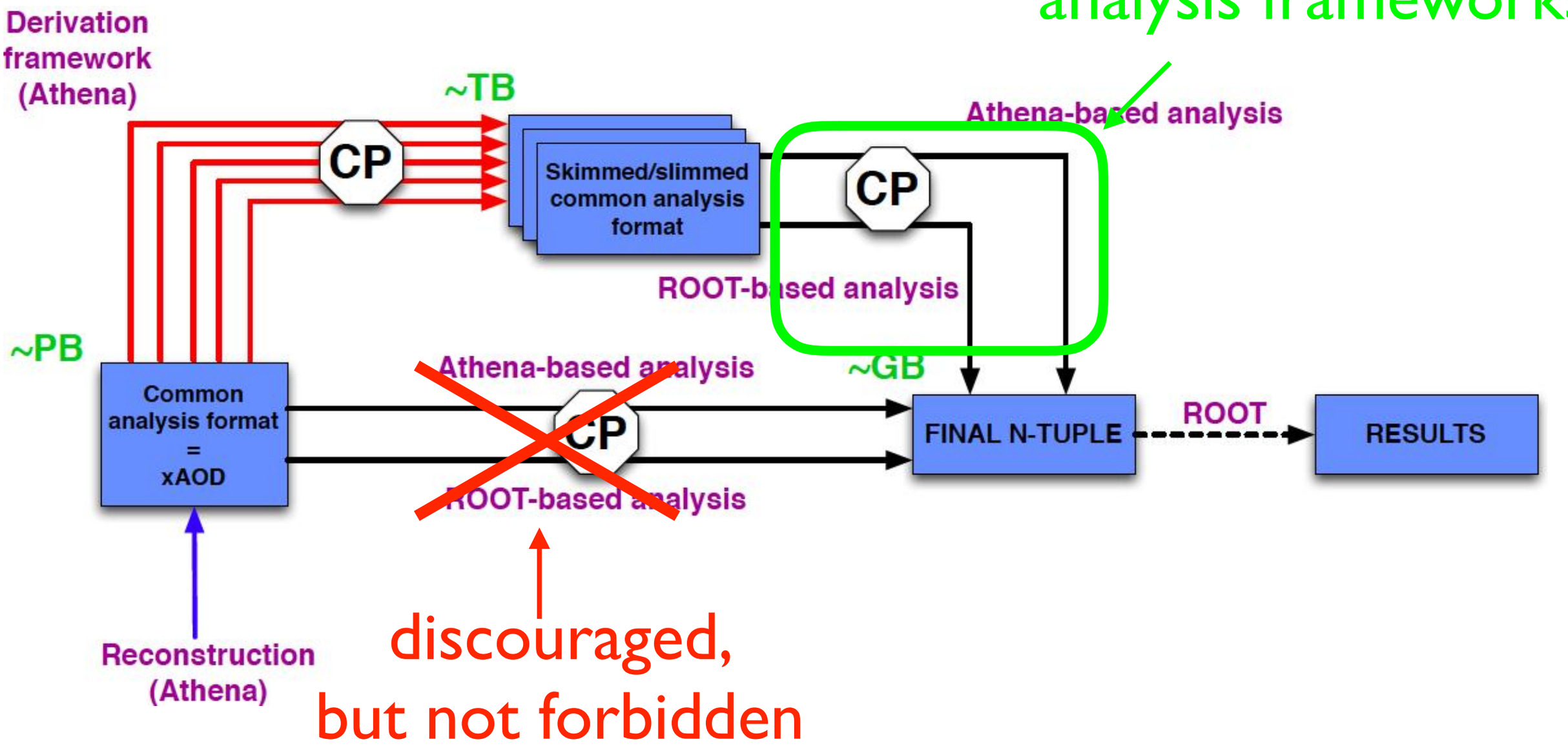


Analysis Workflow



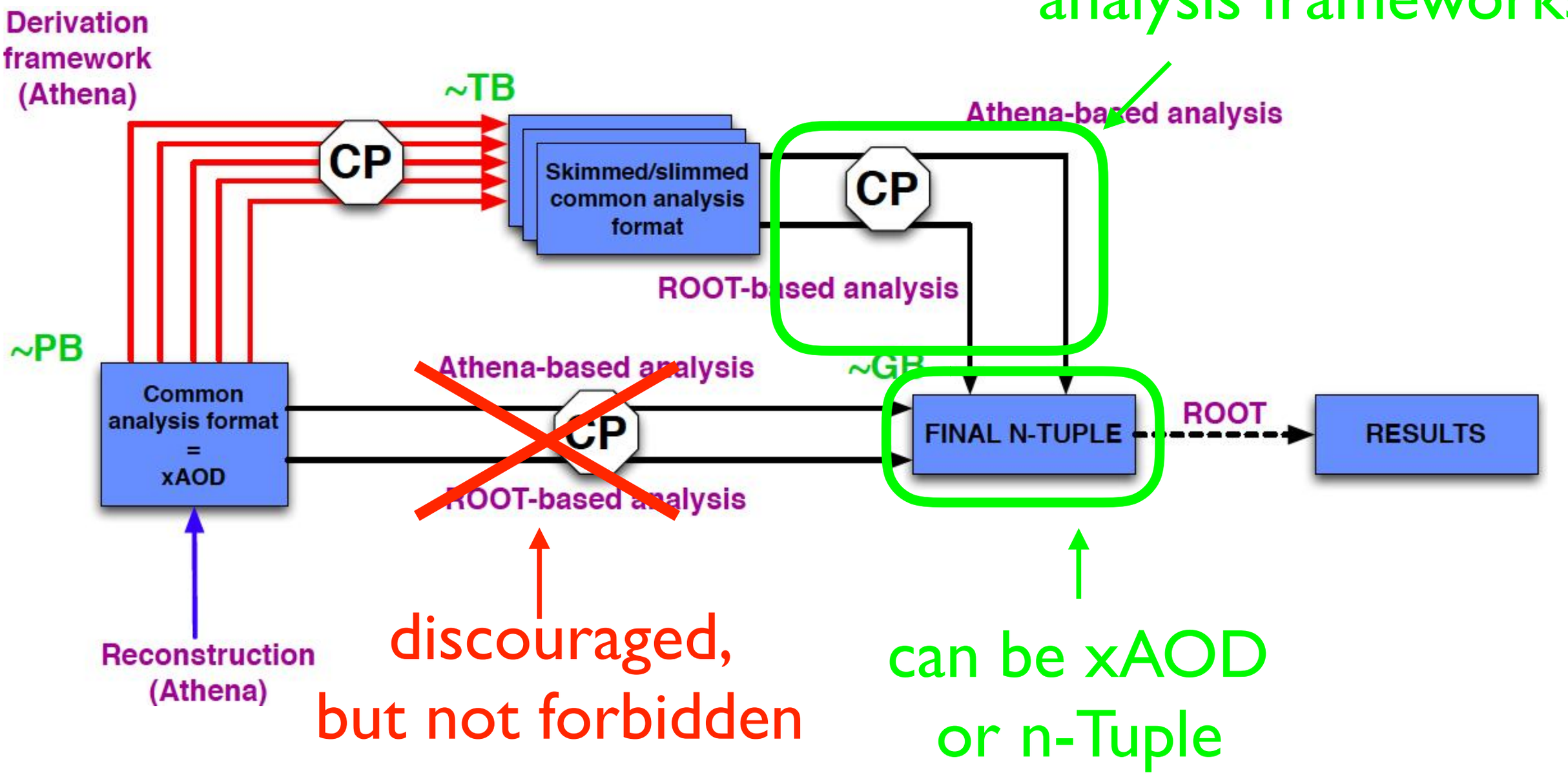
Analysis Workflow

typically done by analysis frameworks



Analysis Workflow

typically done by analysis frameworks



Analysis Environments

- we currently have two analysis environments:
  - Athena and RootCore
  - not by design, but because many analyzers did not use athena

- within RootCore multiple ways of running jobs:
  - EventLoop package, custom frameworks, for loop/MakeClass/etc.
  - partly because of legacy code
  - partly because some people don't like algorithms

- more of a toolbox than a framework:
  - i.e. users get to choose what to use and not to use
  - developed as set of (mostly) independent projects
  - only build system (RootCore) is mandatory

RootCore Utilities

- RootCore utilities typically started as small, focused packages
  - often more restrictive than Athena-equivalent
  - then extended over time to cover more use cases
  - generally became more Athena like over time
- lately developed a number of dual-use utilities
  - i.e. utilities that work the same in both RootCore and Athena
  - mostly driven by need to provide CP tools for Athena users

- RC utilities can't do everything their Athena equivalent can, but:
  - cover most of the analysis use cases
  - have extra features for analysis
  - have less overhead
  - (typically) have a shorter learning curve
  - (typically) come with a fair amount of documentation
  - (typically) keep legacy interfaces for a long time

Possible Consolidation?

- maintaining two environments is a drag on resources:
  - probably several FTEs on development and maintenance
  - users divided into two groups that can't easily cooperate

- both Athena and RootCore are fairly similar by now:
  - we have analysis releases that are identical (except for core packages)
  - RootCore utilities often have some Athena resemblance
- if we use all RootCore utilities, it can be similar to Athena, e.g.: https://twiki.cern.ch/twiki/bin/viewauth/AtlasComputing/SoftwareTutorialQuickAna
  - of course not every analysis user uses all utilities
  - not using everything RootCore utilities can do either

- some sociological problems to:
  - i.e. users are used to avoiding Athena

Possible Migration Path?

- first we need a common build system
  - makes it a lot easier to reuse Athena components elsewhere
  - hopefully solved by migration from cmt/RootCore to cmake

- ideally would like to use Athena services without the event loop
  - could immediately retire some RC utilities (e.g. messaging)
  - could provide things missing from RC utilities (e.g. configuration)
  - would lead to more of a toolbox approach

- could then gradually merge or retire the RC utilities
  - no point in having two similar tools in the same environment
  - should make sure to preserve the extra analysis features
    - maybe also preserve some of the interfaces?
  - some tools don't have an Athena equivalent
  - probably needs a long transition period
  - probably needs some PR work as well