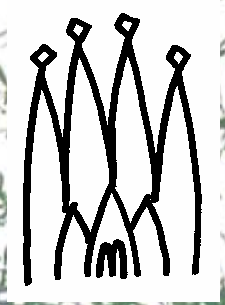


Bender & Visualization(s)

Smart&Transparent Python/LoKi-based Physics Analysis +4 demo

Vanya Belyaev
CERN & ITEP/Moscow

LoKi + Python = Bender

- `Python` allows to make the code even more compact and readable
- `Python` allows to keep the code and the options together in one file
  - Improved locality
- `Python` allows to make analysis interactive
  - Invoke `Bender` from `Panoramix` prompt ?
    - Still into ink-bottle, not tested yet, should be trivial
- The only one executable for all persons and all their jobs
  - No private libraries, no compiler, linker etc
    - Login into lxplus
    - `BenderEnv v2r0`
    - enjoy
- 'Platform independent' (to some extent)
  - Develop and test algorithms on laptop (Win) and then send the script to 'large' (external) center (Linux)
- Each separate analysis – 1 self-contained `Python` file with code and options
  - Easy to send 1 file to other center e.g. for preselection

Interactivity

- **Interactivity is not only "Python prompt" !**
  - One needs visualization
    - Histograms, (NTuples)
    - Event Display

Bender is friendly guy!

- It nicely collaborates with
  - **ROOT** via **SEAL** dictionaries (thanks to Pere)
    - Native **ROOT** histograms + (NTuples) + all **ROOT** stuff
  - **ROOT** via **PI**
    - **AIDA** histograms
  - **HippoDraw** via **PI**
    - With some headache (PI is not bug-free, even demo examples)
    - **AIDA** histograms & clouds
  - **LaJoconde**
    - **AIDA** 1D histograms
    - Event Display, Geometry, etc

4 demos!

Analysis Model

- My view on analysis models is highly biased
  - I am physicist,
  - I am making physics analyses in LHCb
  - I am code developer

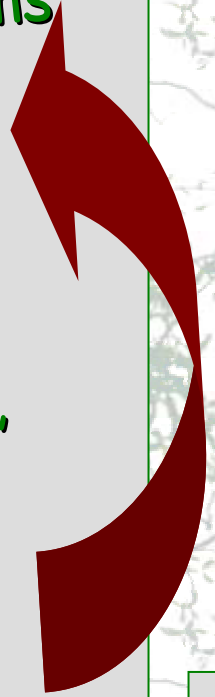
AS A SEQUENCE :

I DO NOT KNOW EXACTLY WHAT PHYSICISTS NEED

- Preselection
  - Significant reduction of data sample
  - Simple/Efficient/Short/Dumb (1-2 pages) selection (C++ or `Python`) algorithm
  - (several times, with `miniDST` and/or `Event Tag Collections`)
- (Pseudo) interactive analysis (≤ few hours) with more sophisticated C++ or `Python` algorithms
  - (several times, with `miniDST` and/or `Event Tag Collections`)
  - Produce NTuples
- Interactive analysis with `ROOT` or `PAW`

Analysis Model : Bender

- Develop (interactively) Bender-base algorithms
- Test it with events,
- Inspect histograms, (tuples)
- Inspect TES,
- Visualizse 'interesting' events'
- Update algorithm
- Run "many" events
  - (collaborate with Ganga?)



From one Python prompts in one interactive 'job'

Analysis models

- Bender is friendly guy! It nicely collaborates with
  - **ROOT** via **SEAL** dictionaries (thanks to Pere)
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    - **AIDA** 1D histograms
    - Event Display, Geometry, etc

4 demos!

Bender

Ostap Suleiman Berta Maria Bender-bei

Остап Сулейман Берта Мария Бендер-бей

- The cult-hero of two Russian books by I. Ilf & E. Petrov
  - "The 12 chairs"
    - 12 стульев
  - "The golden calf"
    - Золотой телёнок
- The title: "The great schemer"
- Attractive & brilliant cheater

Essential for successful and good physics analysis