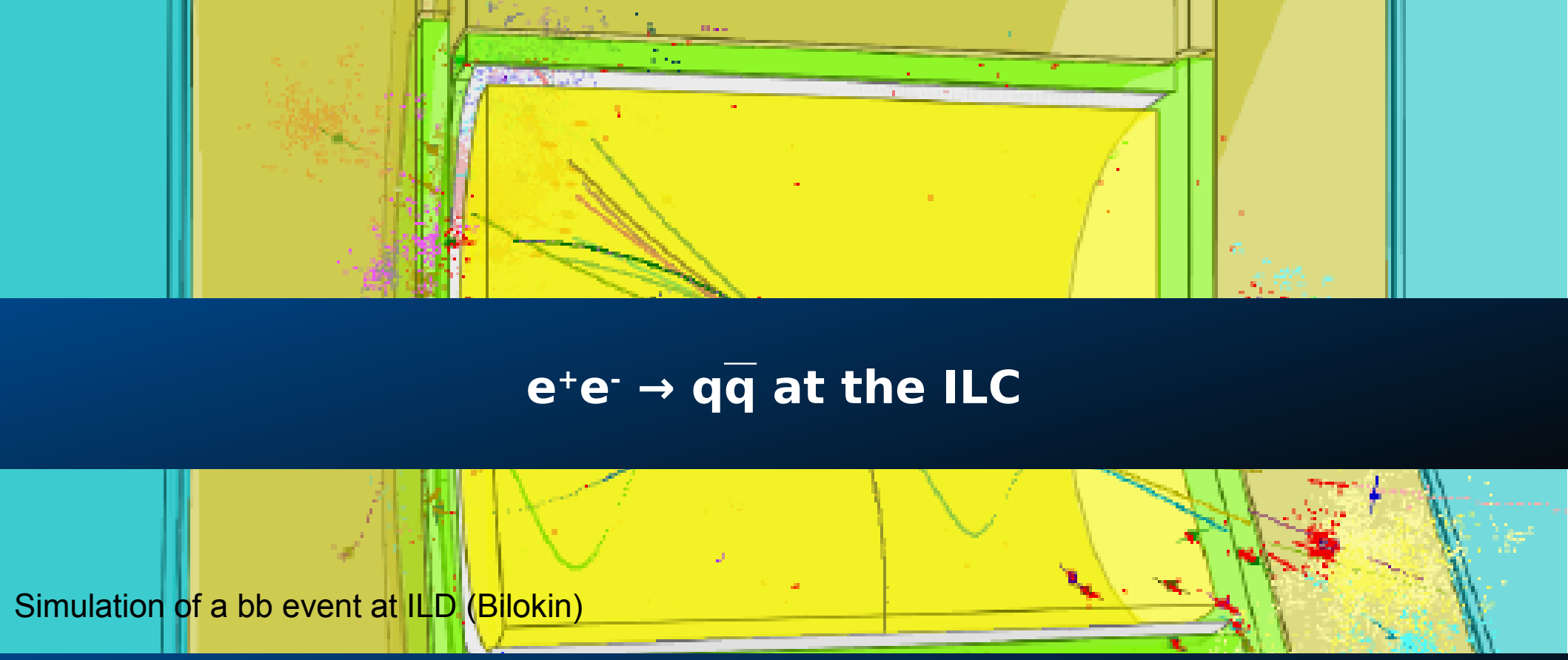
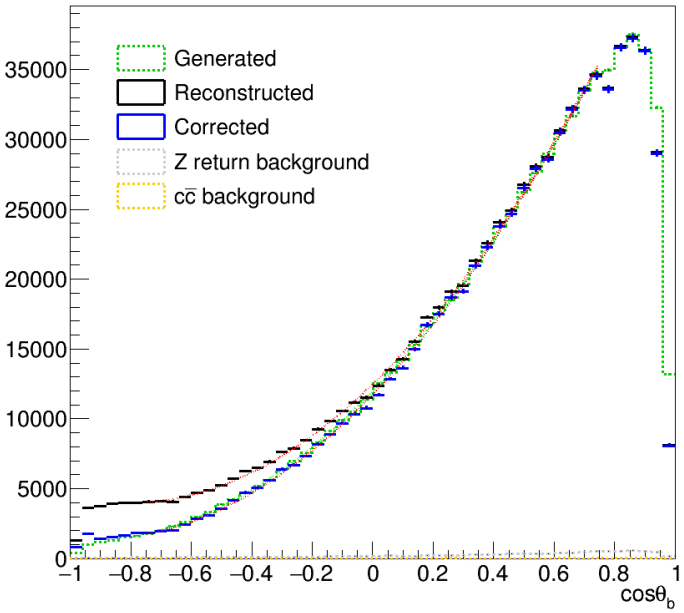


$e^+e^- \rightarrow q\bar{q}$ at the ILC

Simulation of a bb event at ILD (Bilokin)

A. Irles, 1st June 2018

What I have done?



Nice agreement with what S. Bilokin has in the thesis

- I repeated S. Bilokin analysis of the bb asymmetry measurement (cosθ) using e+e- → $b\bar{b}$, 250 GeV, ~266 fb-1 with left (and right) polarization simulated samples
  - /ilc/prod/ilc/mc-dbd/ild/dst-merged/250-TDR_ws/2f-highM_Z_hadronic
- Analysis chain (proccessor chain):
  - SatoruJetFinder (2 inclusive jets using Durham)
  - JetClusteringAndFlavorTag"
  - LcfiplusProcessor (jet clsutering, cleaning, vertex refiner, and flavor Tag)
  - VertexRestorer (Bilokin)
  - TTBarProcessor, bbbar case (also Bilokin's code)
- Submitted to DIRAC
  - Is anyone using this regularly? If yes: I have a couple of questions for you…
  - ILCSoft release version: 011706_sl6 (which is sl6-v01-17-06)

Specific Processors to this analysis

VertexRestorer

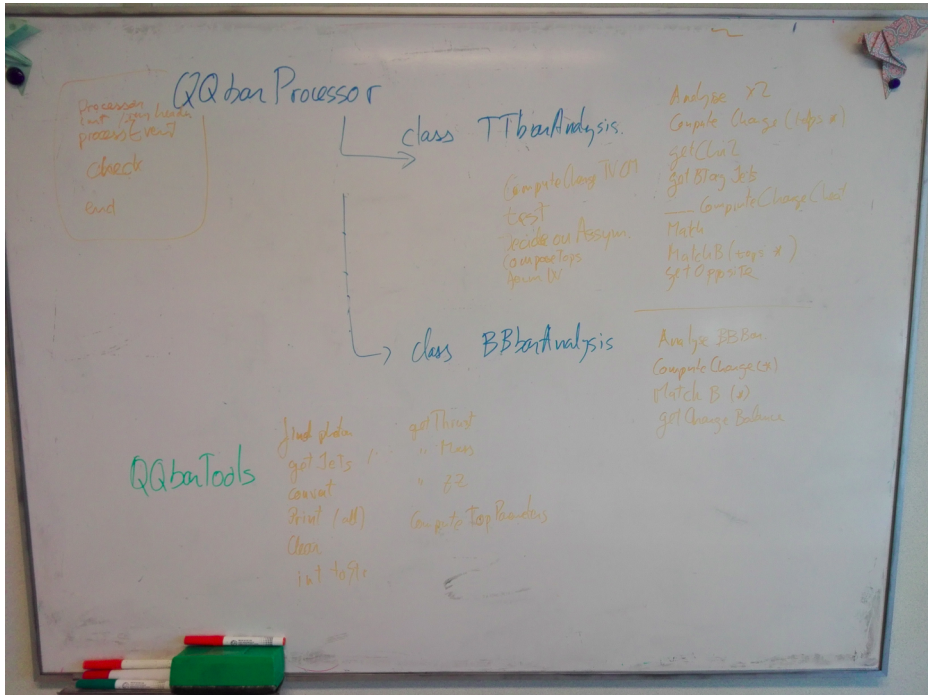
- Version used
  - No: ILCSoft/MarlinReco (outdated version with less functions and it does not compiles)
  - No: Bilokin's version in the github (it also looks a bit outdated)
  - Yes: Version compiled by R. Poeschl (/sps/flc/poeschl/yasui-ttbar/yasui)

TTBarAnalysis

- Version used:
  - Similar situation than above: I use the private version with some minor changes

I focus, for the moment, in the understanding of the TTBarProcessor (next slide)

TTBarAnalysis → QQbarAnalysis



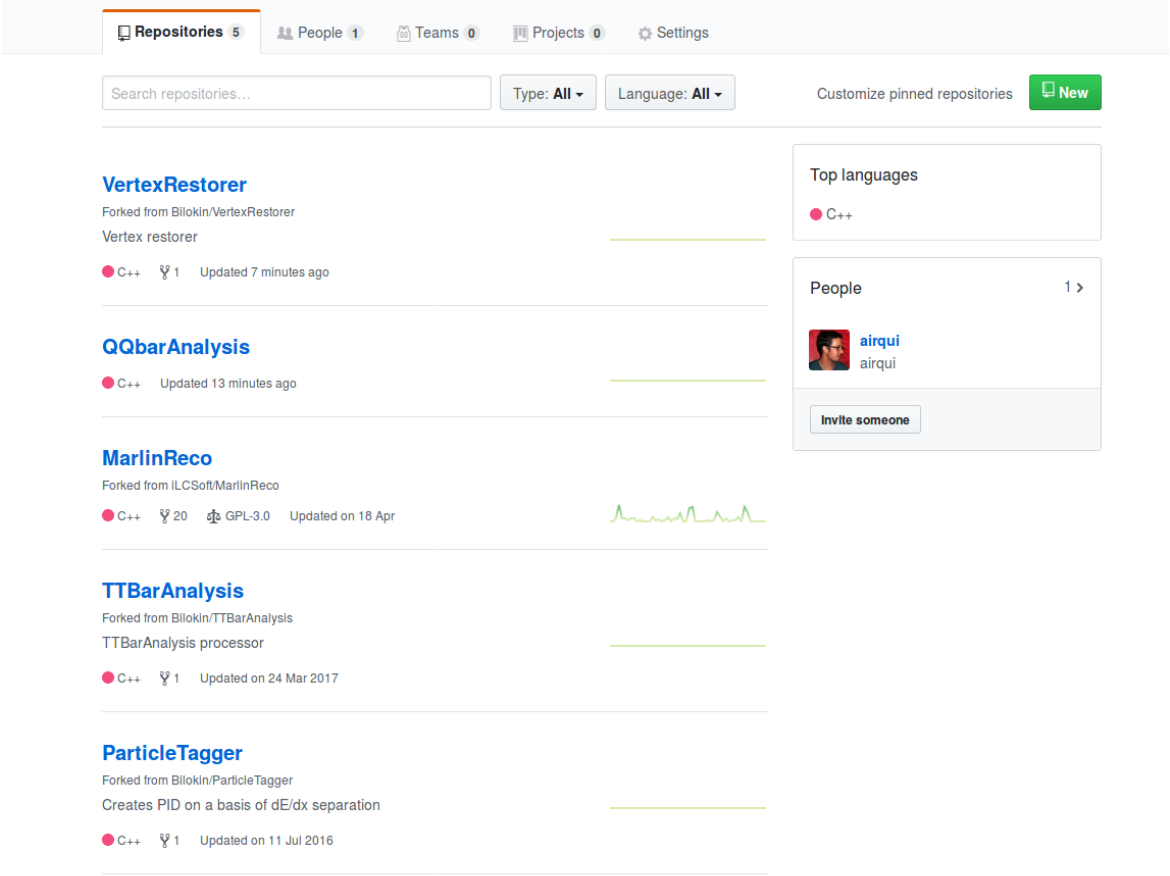
- The TTBarAnalysis proccessor condensates a great amount of work from Sviatoslav.
- As usual, it has grown exponentially in time:
- It uses to ~ 35 functions (plus a lot of methods)
  - 5 are the processor base functions
  - ~11 are common for bbar and ttbar analysis
  - 4 are needed (so far) for the bbbar
  - The rest are for the ttbar analysis
- **All in a single file… makes things difficult!**

New structure ongoing:

- QQbarAnalysis is the processor
  - QQbarTools contains the common functions
  - BbbarAnalysis the bbar specific functions
  - TtbarAnalysis the ttbar specific functions.

TTBarAnalysis → QQbarAnalysis

- All is in a recently created github community : https://github.com/QQbarAnalysis
  - VertexRestorer → updated
  - QQbarAnalysis (bbbar is done, ttbar in progress)
  - MarlinReco → forked only as reference (the VertexRestorer in it is outdated)
  - TTBarAnalysis → being exported to the QQbarAnalysis
  - ParticleTagger (non tested)
- Will be available soon...



Next steps

- At present day I am able to rerun the analysis with:
  - New samples (new models, different energies), different releases (maybe use the new conformal tracking algorithm when released)
- In the short term, in parellel to the previous bullet point:
  - Continue the cleaning, with care, of the software (lot of code that is commented out or not used)
  - Expand the truth level study of the bbar analysis which currently at born level, i.e. QCD@LO
- Medium term… get deeper in the VertexRestorer code from S. Bilokin.