APC Paris

G. Marchiori
For the APC team

ATLAS France CAF-user meeting
28 November 2024

Team and involvement in S&C

Composition of the team

→ *team: 1 EC - 2 CNRS - 2 PhD (1 cotutelles) - 1 post-doc*

→ *(current) analyses/activities:*

- *Higgs boson:*
  - *Search for double Higgs to bb+tau (-> Higgs boson self-coupling) with Run3 data*
- *Performance: b-tagging calibration, tau energy scale calibration*
- *Pixel radiation damage simulation in Athena; ITk digitisation software development*

Involvement of the team in computing

→ *ADCOS shifts shifts computing*

→ *Analysis Release shifts*

Staff IE/IR: 0
Staff physicist: 0.14
Students/postocs: 0.09

Involvement of the team in software

⟶ *egamma derivation software development and group production*

→ *Pixel and ITk software*

Staff IE/IR: 0
Staff physicist: 0.80
Students: 0.35

Computing resources in 2024-2025

Pledged Tier 2 grid resources (2024)

- storage = 0 TB (**+0% in 2025**)
- computing = xx HS23 (i.e ~xx cpu) (**+xx% in 2025**)
- network : 0 Gbps

Other non pledged grid resources

- storage = 0 TB in LOCALGROUPDISK
- computing = 0 HS23

Other local (lab, university) resources

- HPC cluster "DANTE" available at APC: 640 CPU (Intel Xeon Gold 6230 2.1GHz 20C/40T), 2.3 TB RAM, divided in 16 nodes. 160 TB BeeGFS
- local team server (96 cores, 512 GB RAM, Nvidia Quadro GV100, 24 Tb HDD SATA + 6 Tb SSD)

Analysis and needs

HH(bbtautau) partial Run3 paper

→ analysis software being migrated (new framework, new athena release) – contributed to software so far, physics studies to be started to category optimisation (based on BDTs) + modelling studies

→ model: DAOD (PHYS) -> NTUP (smaller, calibrated DAOD produced centrally by analysis group via "Easyjet" framework) -> ntuples/hists/plots (via HHARD framework)

→ time to process: ROOT file production ~1 week to process MC with all systematics, ~1 week to run over data, on grid BDT optimisation: not done yet, but numbers might be similar to the past ~1h/training, typically need to do hundreds of training for different values of hyperparameters, performed in batch (~12 hours)

→ where this analysis is mostly performed: grid (DAOD->NTUP) + CERN/CC-IN2P3/other TIER-3 (plots, BDT optimisation on ntuples, …)

→ good points/difficulties/needs/expectations: hard to say as work on analysis so far was on central code development/running on grid

ITk radiation damage simulations

→ simulate radiation damage and extract maps of electric field, use in dedicated simulation tool to extract weights to correct nominal ATLAS simulations to model effect of rad. damage

→ use Silvaco IN2P3 software license (token hosted on CC-IN2P3 license server) and run the software on local machine @APC

Near future

Activities of the team

→ *Continue with same activities*

Resources and needs

→ *No evolution of local resources*

→ *Might start to exploit more CC-IN2P3 resources (batch, GPU..) for analysis optimization*

AOB

Details on Software involvement

Information taken from OTP report
Assuming 2nd semester will give same OTP as 1st semester
Total software involvement = 1.15 FTE

Name	OTP	Activity	System	Task	FTE
Marco Bomben	C3	Computing/Software	PIXEL	Software Development/Maintenance and Physics Performance	0.4
Marco Bomben	C3	Computing/Software	Upgrade	ITk - ITk Offline Software	0.1
Keerthi Nakkalil	C3	Computing/Software	Upgrade	ITk - Pixel Offline Software	0.1
Alexis Maloizel	C3	Computing/Software	Upgrade	ITk – ITk Offline Software	0.25
Giovanni Marchiori	C3	Computing/Software	General Tasks	Group activities	0.30

Details on ADAM involvement

Information taken from OTP report

Total software involvement = 0 FTE

Details on Computing involvement

Information taken from OTP report
Total computing involvement = 0.23 FTE

Name	OTP	Activity	System	Task	FTE
Gregorio Bernardi	C2	Computing/Software	General Tasks	ADCoS	0.05
Tong Li	C2	Computing/Software	General Tasks	Analysis Release Shifts	0.09
Giovanni Marchiori	C2	Computing/Software	General Tasks	Analysis Release Shifts	0.09