LPNHE Paris

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ATLAS France CAF-PAF meeting
9th December 2021

Team by end 2021

Composition of the team

→ ***team: 6 EC - 8 CNRS – 17 IT (6.4 FTE) on ITK & HGTD***
– 2 IT (0.8 FTE) on grid – 1 postdoc – 4 PhD

→ ***analyses:***

Performance: e/gamma, large jets calibration, b-tagging, ETmiss reco, time reco
Measurement of inclusive jet and dijet cross-sections
Higgs boson: observation of Hbb; Hγγ mass measurement, couplings, cross section
BSM physics: diphoton resonance; dijets resonance; SUSY particles in γγ+MET
Top quark: mass/b-fragmentation

Involvement of the team in computing (based on OTP pages report)

~1 FTE in 2017, 1.5 (2018), 1.7 (2019), 1.5 (2020), **1.48 (2021)**
Staff IE/IR: 1IR+1IE GRIF-LPNHE (0.8 FTE Class 4)
Staff physicist: CAF+FR-cloud (0.45 FTE C3) + GRIF-LPNHE (0.1 FTE C4)
shift computing (0.13 FTE C2)

Involvement of the team in software (based on OTP pages report)

1.4 FTE in 2017 and 2018, 1.6 (2019), 1.48 (2020), **1.28 FTE in 2021**
Staff physicist: detector ~0.6 FTE, reco/analysis ~0.68 FTE)

Computing resources in 2021-2022

Pledged Tier 2 grid resources

- storage = 1740 TB (**+230 TB wrt 2021**)
  → expect more storage for the end of the year (~300 TB) + correct pledge in cric
- computing = 13500 HS06 (i.e ~1350 cpu) (**same as 2021**)
  → foreseen pledge was +4000 HS06 but finally bought storage
  ⇒ need to correct pledge in cric
- network : 10 Gbps ⇒ expect 20 Gbps soon

Other non pledged grid resources

- storage = 600 TB in LOCALGROUPDISK
- computing >10000 HS06 through fairshare of GRIF-LPNHE site

Other local (lab, university) resources

- storage : few tens of TB attached to local server (ceph)
- computing : 1 group server with 32 cores, no batch system
- cloud : ~400 cores bought in summer 2021
  for analysis (to be done), for service (e.g Itk production DB)
- high performance computing :
  - several actors/resources nearby at universities but not easy to use

Analysis and needs

Detector studies (local/CERN)

→ pixels & HGTD studies : resource level and usage similar to last year

Performance studies (local/CERN/CC-IN2P3/GRID)

→ jets & b-tagging studies : resource level and usage similar to last year

Analyses studies (local/CERN/CC-IN2P3/GRID)

→ Higgs studies : resource level and usage similar to last year

→ Top studies : local (as last year) + higher use of CC-IN2P3 batch (mass)
+ CERN interactive & batch (b-fragmentation)

Analyses using Machine Learning / GPU

→ same analyses as last year : NN for online electron filtering, e/gamma calibration, optimisation of detector design

→ asked for 2 months-GPU use at CC-IN2P3 farm in 2021 but did not used it

Near future

Activities of the team

→ evolution: stable in the 2 coming years

Resources and needs

→ next ‘Accord labo-LCG’ for WLCG is important

→ limited amount of computing ressources locally (not counting grid)

→ effort in laboratory for ML/IA in the coming years: training etc.
but also more involvement of computing engineers –
but limited personpower in IT team
new post-docs from ANR are expected in 2022 ⇒ more needs ?

→ needs for storage/computing at CC-IN2P3
(as reported to CAF in September) : same in 2022 as in 2021

LPNHE software involvement (1/2)

Information taken from OTP reports
(*contributions from January to mid-October, for later period counted as APC)
Software involvement = 1.28 FTE (was 1.48 in 2020), S&C+AS = 1.04 FTE
(Core=0, Upgrade=0, Detector=0.60, Ana/Reco=0.68)

Pixel detector: 0.36 FTE (Detector=0.36) [S&C+AS=0.36]

Name	OTP	Activity	System	Task	FTE
*M. Bomben	C3	Computing/Software	Pixel	Software Development/Maintenance and Physics Performance	0.32
G. Calderini	C3	Computing/Software	Pixel	Software Development/Maintenance and Physics Performance	0.04

Data preparation 0.24 FTE (Detector=0.24) [S&C+AS=0]

Name	OTP	Activity	System	Task	FTE
B. Laforge	C3	Data Preparation	General Tasks	Offline DQ Monitoring Software & Debugging -- Egamma	0.20
B. Laforge	C3	Data Preparation	General Tasks	Offline DQ Monitoring Software & Debugging – Jet/Etmiss/CaloGlobal	0.04

LPNHE software involvement (2/2)

Reco/Ana: 0.68 FTE (Reco/Ana=0.68) [S&C+AS=0.68]

Name	OTP	Activity	System	Task	FTE
*R. Bouquet	C3	Computing/Software	General Tasks	Analysis Model Group	0.11
Y. He	C3	Computing/Software	General Tasks	Analysis Model Group	0.10
B. Malaescu	C3	Computing/Software	General Task	Analysis Model Group	0.14
B. Malaescu	C3	Computing/Software	General Task	Group Activities	0.02
*G. Marchiori	C3	Computing/Software	General Task	Group activities	0.24
*G. Marchiori	C2	Computing/Software	General Task	Analysis Release Shift	0.05
B. Malaescu	C3	Analysis support	General Task	Internal software	0.04

Other (ACTS etc ...) : FTE

Name	OTP	Activity	System	Task	FTE

LPNHE computing involvement

Information taken from OTP reports
Total computing involvement = 1.48 FTE (0.13 C2, 0.45 C3, 0.90 C4)
(also LCG-FR) was 1.52 in 2020

Class 2 : 0.13 FTE

Name	OTP	Activity	System	Task	FTE
Mélissa Ridel	C2	Computing/Software	General Tasks	ADCoS Senior shifts	0.06
Sophie Trincaz-Duvoid	C2	Computing/Software	General Tasks	ADCoS Senior shifts	0.07

Class 3 : 0.45 FTE

Name	OTP	Activity	System	Task	FTE
Frédéric Derue	C3	Computing/Software	General Tasks	Cloud Operation & Management / Cloud squad	0.30
Frédéric Derue	C3	Computing/Software	General Tasks	Cloud Operation & Management / Cloud manag.	0.15

Class 4 : 0.90 FTE

Name	OTP	Activity	System	Task	FTE
Aurélien Bailly-Reyre	C4	Computing/Software	General Tasks	FR GRIF, Paris	0.30
Frédéric Derue	C4	Computing/Software	General Tasks	FR GRIF, Paris	0.10
Victor Mendoza	C4	Computing/Software	General Tasks	FR GRIF, Paris	0.50