CEA / IRFU

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for CEA / Irfu team

ATLAS France CAF-PAF meeting
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Team by end 2024

Composition of the team

→ ***team:*** - 17 permanent, 2 postdocs, 5 PhD (1 co-tutelle) + 6 co-tutelle finishing in 2024
- 2 IT (1.2 FTE) on ITK
- 5 IT (~3.5 FTE) on Calo upgrade
- 2 IT (1.5 FTE, 0.5 new) on grid (GRIF)

→ ***analyses***
- → ttH multilepton CP
- → 4top
- → EWK precision: W pT, W mass, Z mass, $\sin^2 \theta_W$
- → light-by-light (tau g-2, massive gravitons)

S&C involvement 2024

S&C Institutional Commitments

General Tasks	Computing/ Software	12347	TAG/EI and Conditions/ Metadata Database Development	12350	Conditions Database	France CEA	127	Saclay CEA	Develop and maintain the conditions database infrastructure	0.65	0.20	1.50	43
Muon	Data Preparation	528951	Barrel optical alignment	551723	Alignment experts	France CEA	127	Saclay CEA	M&O, software, DQ	2.00	0.50	0.55	365

Involvement of the team in computing

Staff IE/IR : 0.70 (GRIF)

→ *1 new : now 1.5 FTE on GRIF, ATLAS share is 45 % of this*

Staff physicist : 0.1 (CAF / GRIF)

Involvement of the team in software

Staff IE/IR : 0

Staff physicist : 1.20 (muon alignement, DB)

Computing resources in 2024-2025

Pledged Tier 2 grid resources (2024)

- storage = 7200 TB, +12 % in 2025 (IRFU : 2900, +17 %)
- computing = 70000 HS23, +5.6 % in 2025 (IRFU : 28000, +7.8 %)
- network : 100 Gbps

Other non pledged grid resources

- storage = 1300 TB in LOCALGROUPDISK
- computing = 53000 HS23 over pledge in 2024 (12000 for IRFU)

Other local (lab, university) resources

- computing (servers, clusters, etc …)
  - local cluster (Feynman) : 28 * (64 cores, 256 GB RAM), batch : Slurm
- high performance computing (HPC, GPU ….)
  - 4 GPUs (GA100) @ Feynman
  - HPC : TGCC / Joliot-Curie → investigating whether it can be used
- storage
  - Feynman : 171T (scratch, 57% used) + 100T (work, 82%)

Analysis and needs

Analysis

→ ttH multilepton CP (GPU CC IN2P3)
→ 4top
→ EWK precision: W pT, W mass, Z mass (running at CC IN2P3)
→ light-by-light (tau g-2, massive gravitons)

Detector studies

→ Data quality of LAr Phase-I digital trigger
→ Data quality checks of NSW
→ Alignement of the muon spectro

Machine learning

→ ttH multilepton CP analysis (GPU @ CC IN2P3)
→ ItK pixel – automatic visual inspection of modules (GPU @ CC IN2P3)
→ PLIV (Prompt Lepton Improved Veto) for Run 3

Activity decrease for the first two topics (PhD students defended in 2024)

Near future

No major change in terms of computing / software

However :
→ cloud@IJCLab (for **ITk localDB**) has shown single point of failure when flood in Orsay ==> Need a mirror of the infra., at CC-IN2P3 ?

IRFU software involvement

Information taken from OTP report

Muon detector: 0.10 FTE (Data/Detector=0.10) [S&C+AS=0.10]

Name	OTP	Activity	System	Task	FTE
P-F. Giraud	C3	Computing/Software	Muon	Muon detector performance	0.20
A. Formica	C3	Computing/Software	Muon	Upgrade Muon Software	0.30

IRFU ADAM involvement

Information taken from *OTP report*
ADAM involvement = 0.54 FTE

ADAM: 0.54 FTE

Name	OTP	Activity	System	Task	FTE
A. Formica	C3	Computing/Software	General Tasks	TAG/EI and conditions/metadata database development	0.40
A. Formica	C3	Computing/Software	General Tasks	Database Deployment and Operations	0.20

IRFU computing involvement

Information taken from OTP report
Total computing involvement = 0.55 FTE (0 C2, 0.05 C3, 0.50 C4)

Class 2 : 0 FTE

Name	OTP	Activity	System	Task	FTE

Class 3 : 0.05 FTE

Name	OTP	Activity	System	Task	FTE
E. Chapon	C3	Computing/Software	General Tasks	Cloud Operation & Management / cloud manag.	0.05

Class 4 : 0.75 FTE

Name	OTP	Activity	System	Task	FTE
Institute	C4	Computing/Software	General Tasks	FR GRIF, Saclay	0.45
A. Bailly-Reyre	C4	Computing/Software	General Tasks	FR GRIF, Saclay	0.25
E. Chapon	C4	Computing/Software	General Tasks	FR GRIF, Saclay	0.05