



**Centre de Calcul**  
de l'Institut National de Physique Nucléaire  
et de Physique des Particules

The CNRS logo, consisting of the letters "cnrs" in a white, lowercase, sans-serif font, enclosed within a dark blue circular background.

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# JUNO at CCIN2P3

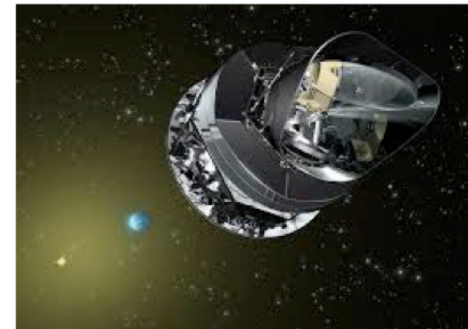
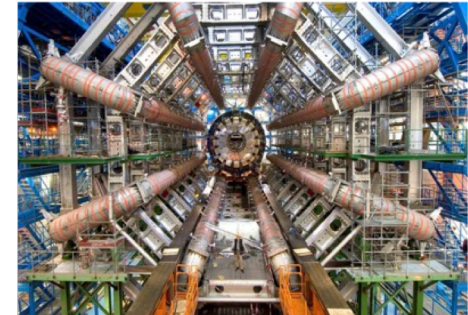
**Rachid Lemrani**

FCPPL meeting, 4 December 2024

# Experiments at CC-IN2P3



- Particle and Hadronic physics
  - Standard model and beyond : ATLAS, CMS, ...
  - Symmetries violation : LHCb, Belle-II, ...
  - Quark-gluon plasma : ALICE, ...
- **Astroparticle physics**
  - **Neutrinos : JUNO, DUNE, NEMO, ...**
  - Cosmology : LSST, EUCLID, PLANCK, SNLS, ZTF, ...
  - Cosmic rays : KM3Net, ANTARES, AUGER, HESS, ...
  - Gravitational waves : VIRGO, LISA, Einstein Telescope
- Nuclear physics
  - Nuclear structure : AGATA, INDRA, ...



# CC-IN2P3 Computing



## HTCondor for WLCG/EGI jobs

- 497 kHS23 (32k threads)
- CentOS7 → RHEL9 (since October)
- HTCondor-23.10.1
- **JUNO : 15kHS23 (132MHS06.h for 2024)**

## Slurm for local jobs, HTC, HPC & GPGPU

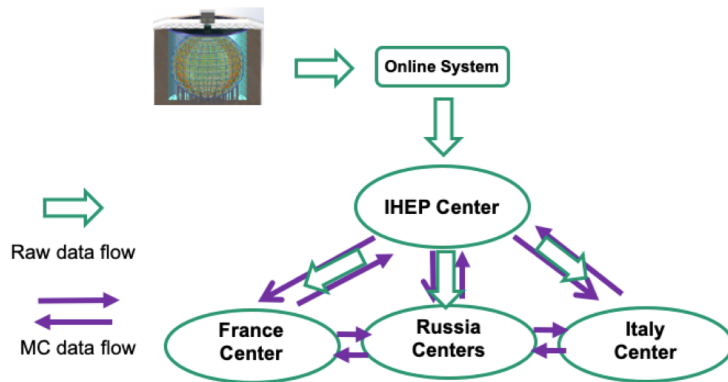
- 359 kHS23 (21k threads)
- 100% RHEL9 (since September)
- **JUNO : 1kHS23 (10 MHS06.h)**
- 72 NVIDIA V100 GPUs (**JUNO: 100 hours**)



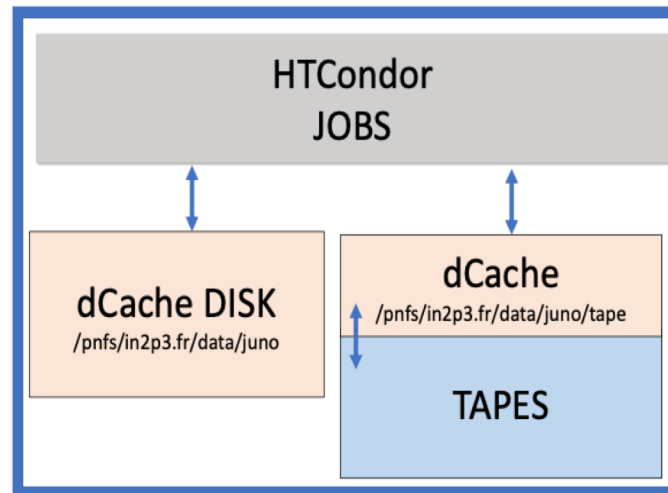
## ARM : 2U4N-DP H262-P61

- 4 nodes : 1024 cores
- to be tested by users (atlas,rubin,...)

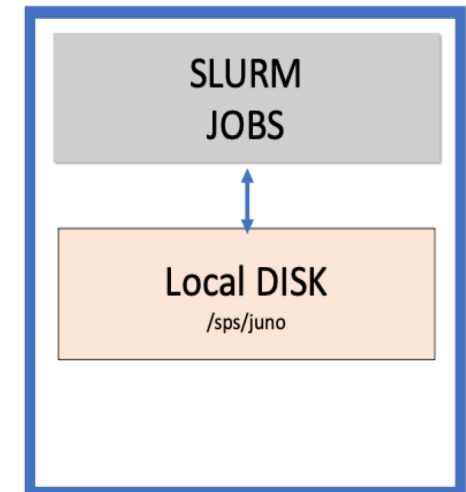
# JUNO Computing at CC-IN2P3



JUNO GRID computing



JUNO LOCAL computing

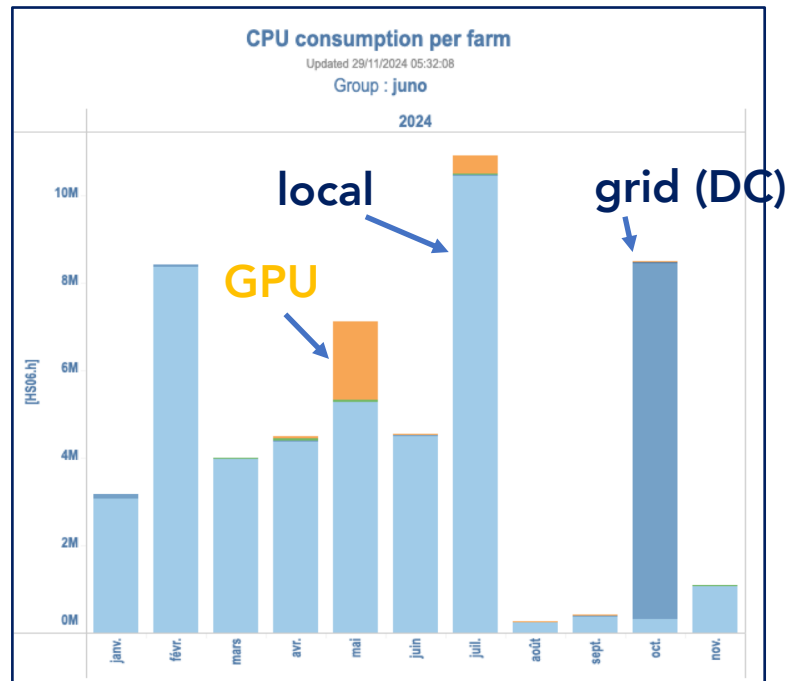


- GRID Computing and storage : support grid certificates and tokens
- Data challenges for data flow, reconstruction and simulations

# JUNO Computing at CC-IN2P3



## JUNO CPU 2024



### CPU 2024 (so far):

- grid : 8,4 MHS06.h
- local : 44,4 MHS06.h

### CPU 2023 :

- grid : 22,7 MHS06.h
- local : 8,0 MHS06.h

Boost for Data Challenges : **up to 3000 slots for JUNO**

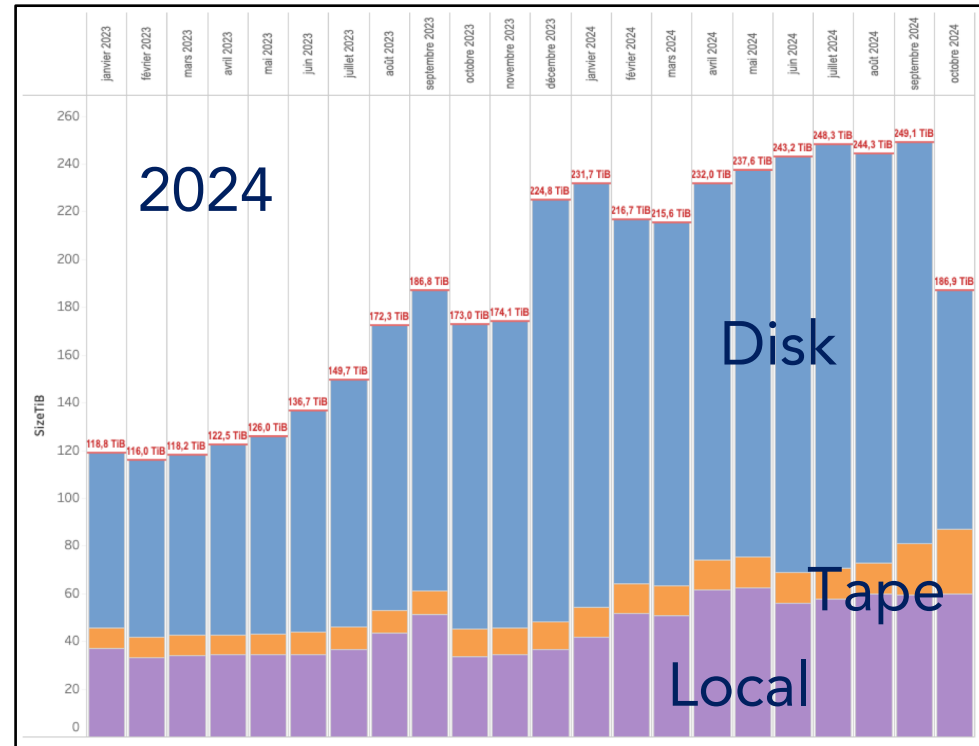
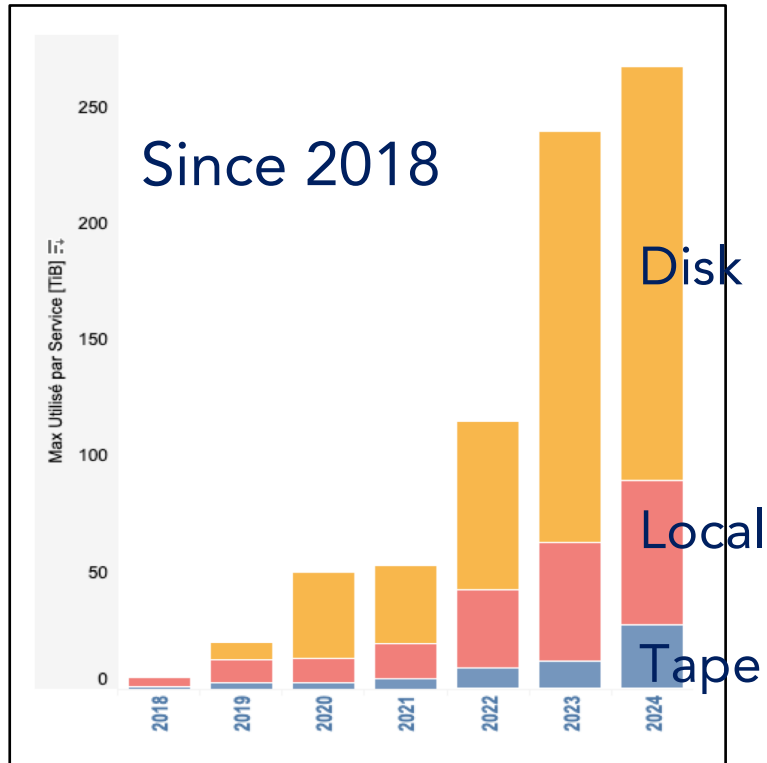
# JUNO STORAGE at CC-IN2P3



JUNO disk : 200TiB

tapes : 2PiB JUNO

local disk : 65 TiB

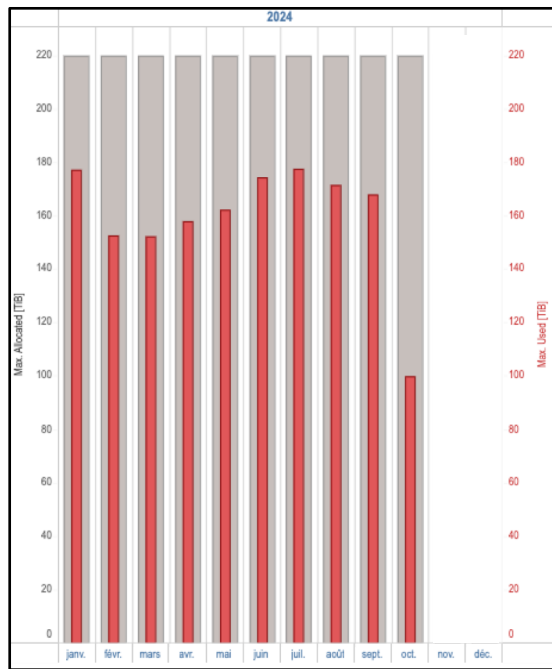


Small usage of tapes so far

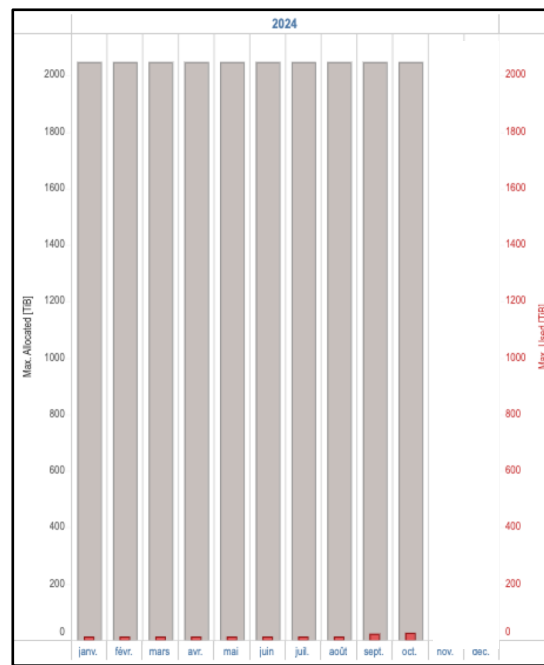
# JUNO DCACHE at CC-IN2P3



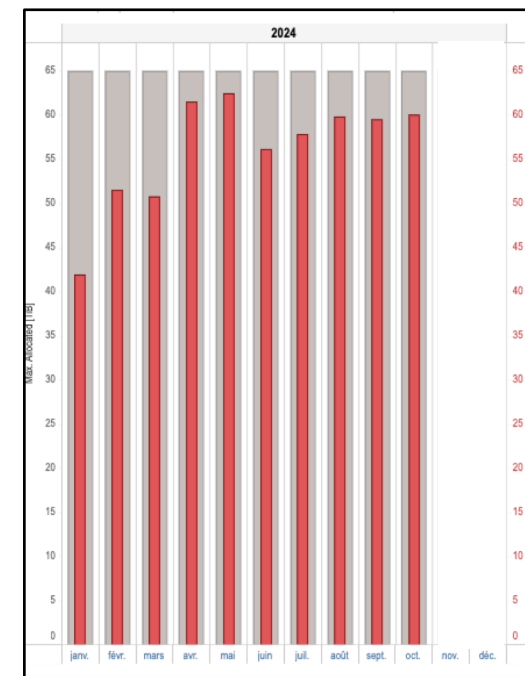
JUNO disk : 200TiB



tapes : 2PiB JUNO



local disk : 65 TiB

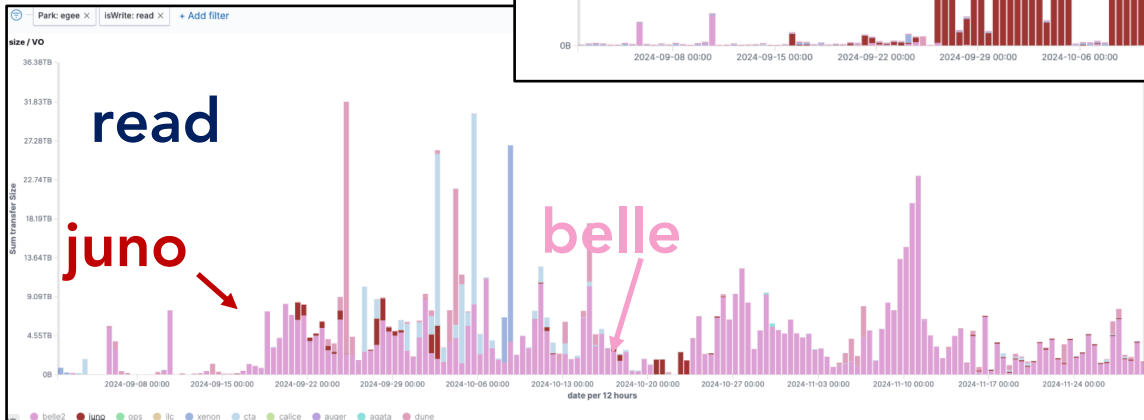
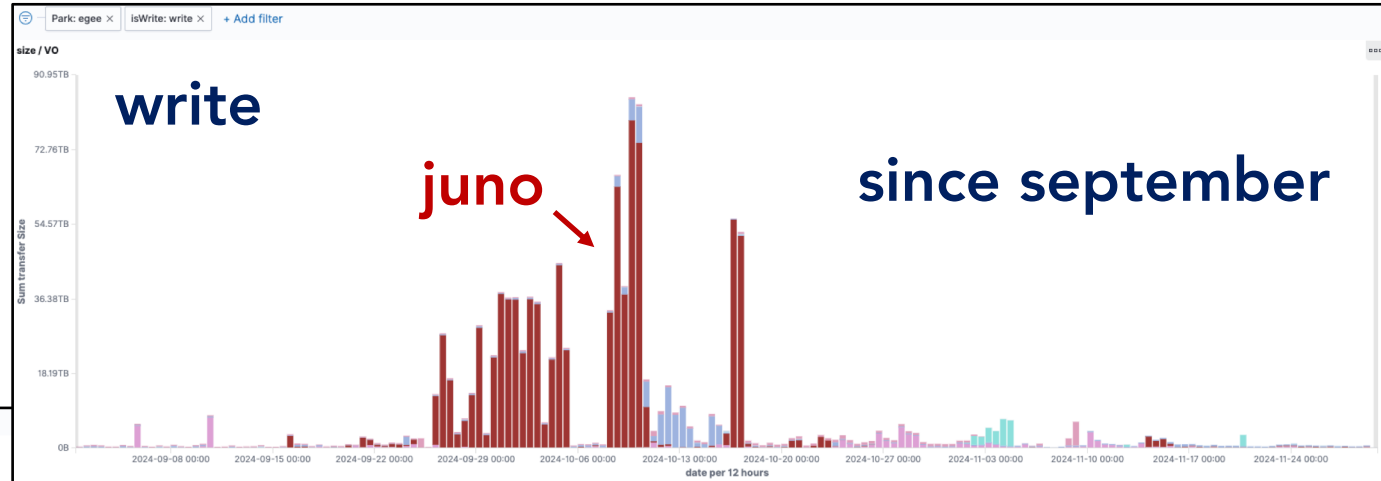


Small usage of tapes so far

# CC-IN2P3 : JUNO Bandwidth



dCache :  
Transfer rates



Good bandwidth

- for transfers
- for the jobs



# Conclusion



CC-IN2P3 : computing for particle physics, astroparticle and nuclear physics

JUNO Computing :

- RHEL9
- boost in priority for JUNO data challenges

JUNO Storage :

- dCache : Disk and Tapes
- Tape usage remains marginal

JUNO starts data taking soon