

# LUXE GEANT4 Simulation Update

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LUXE S&A Meeting  
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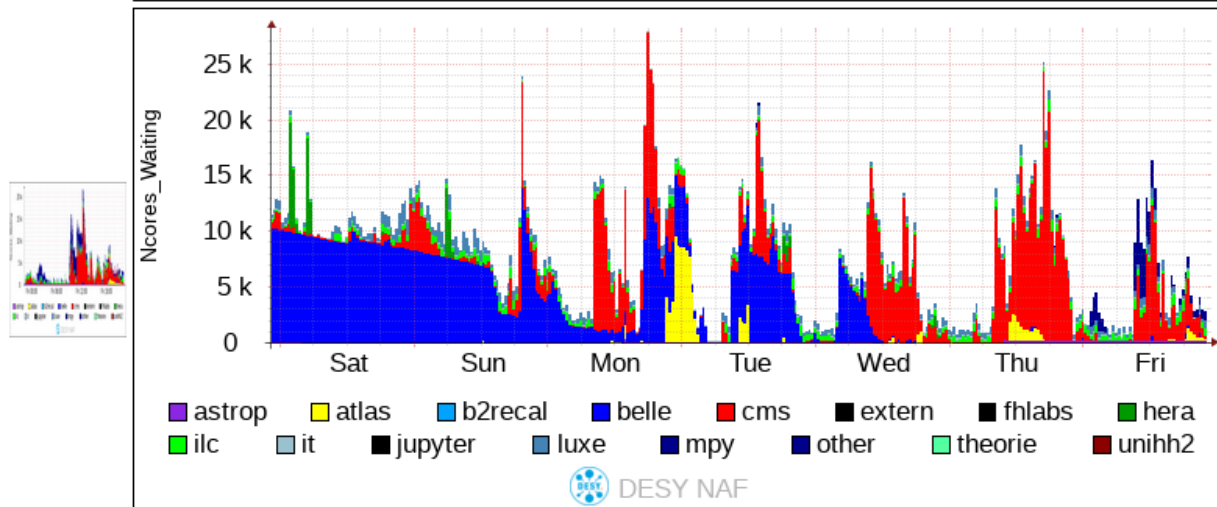
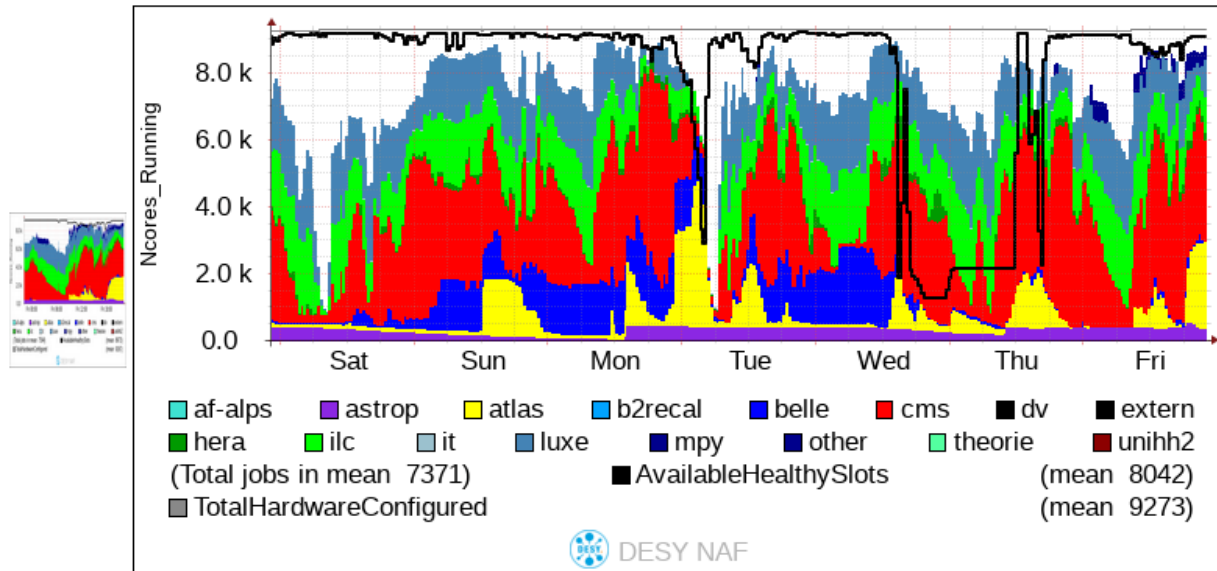
# Background simulation in electron-laser setup

/nfs/dust/luxe/group/MCProduction/Background/elaser/22112022\_33ace143\_ecal

## BIRD HTCondor jobs in week 47-48

Cores over time, different states:

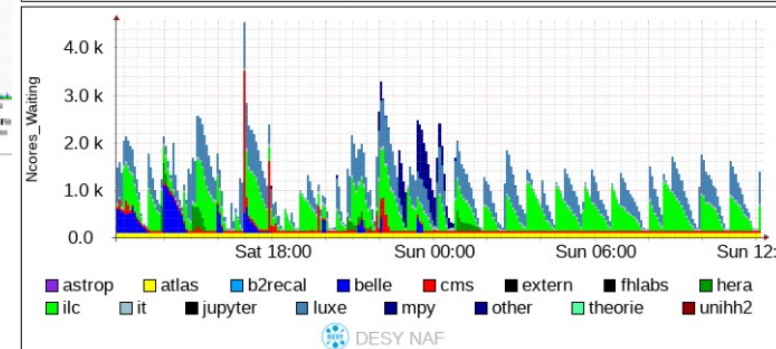
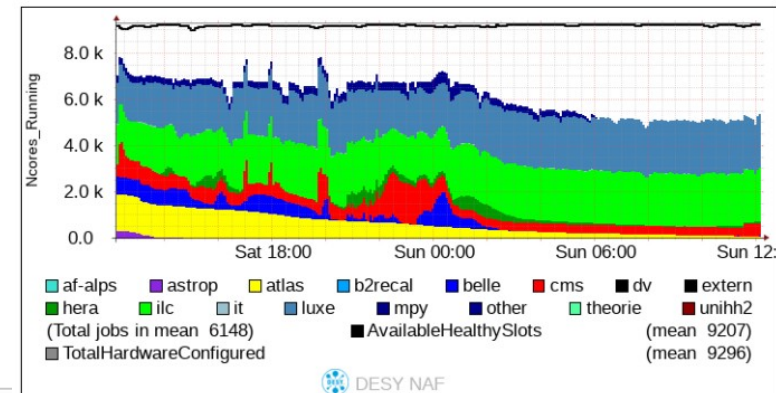
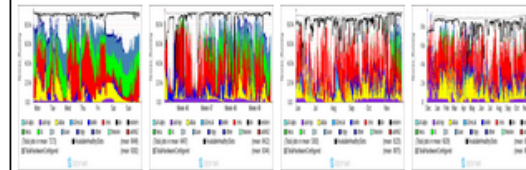
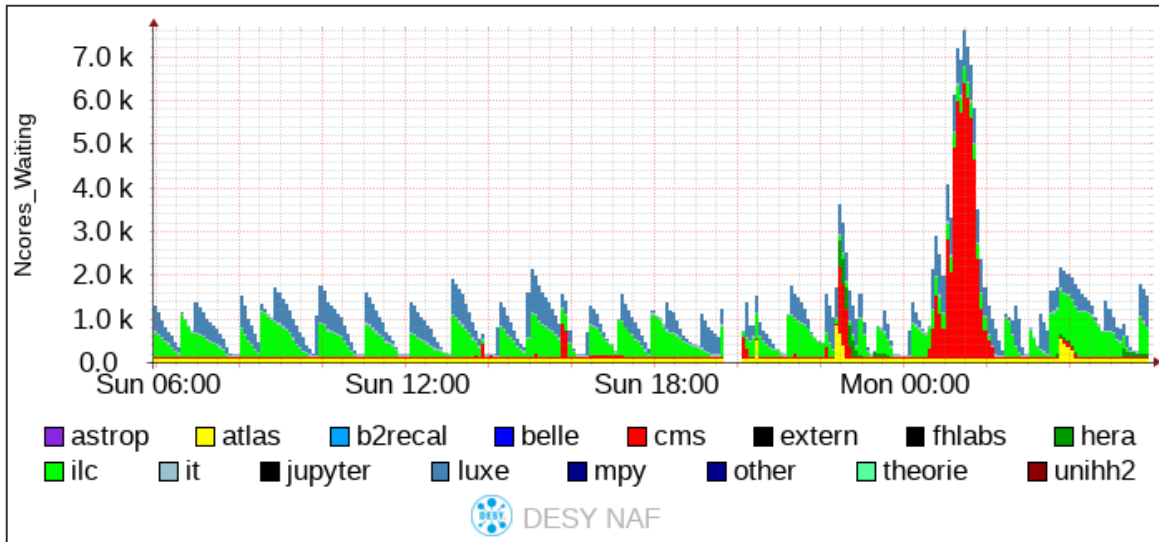
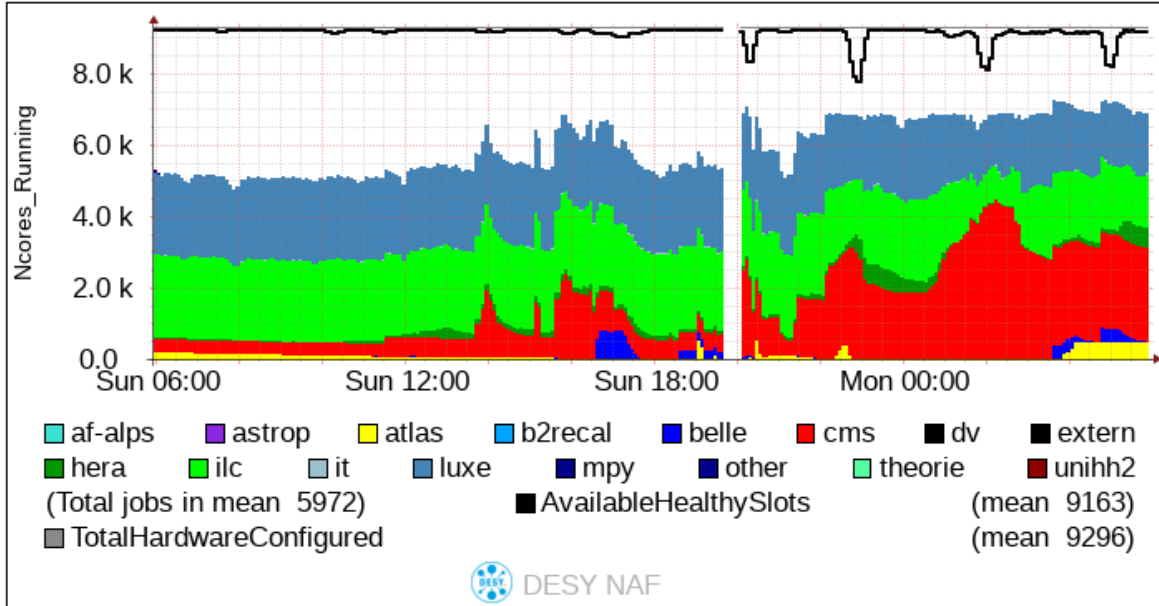
- There are 1730925000 e-simulated, ~1.15 BX;
- About 1 BX moved to TAU storage.



# BIRD HTCondor jobs in last day

**Caveat: These plots are work in progress!**

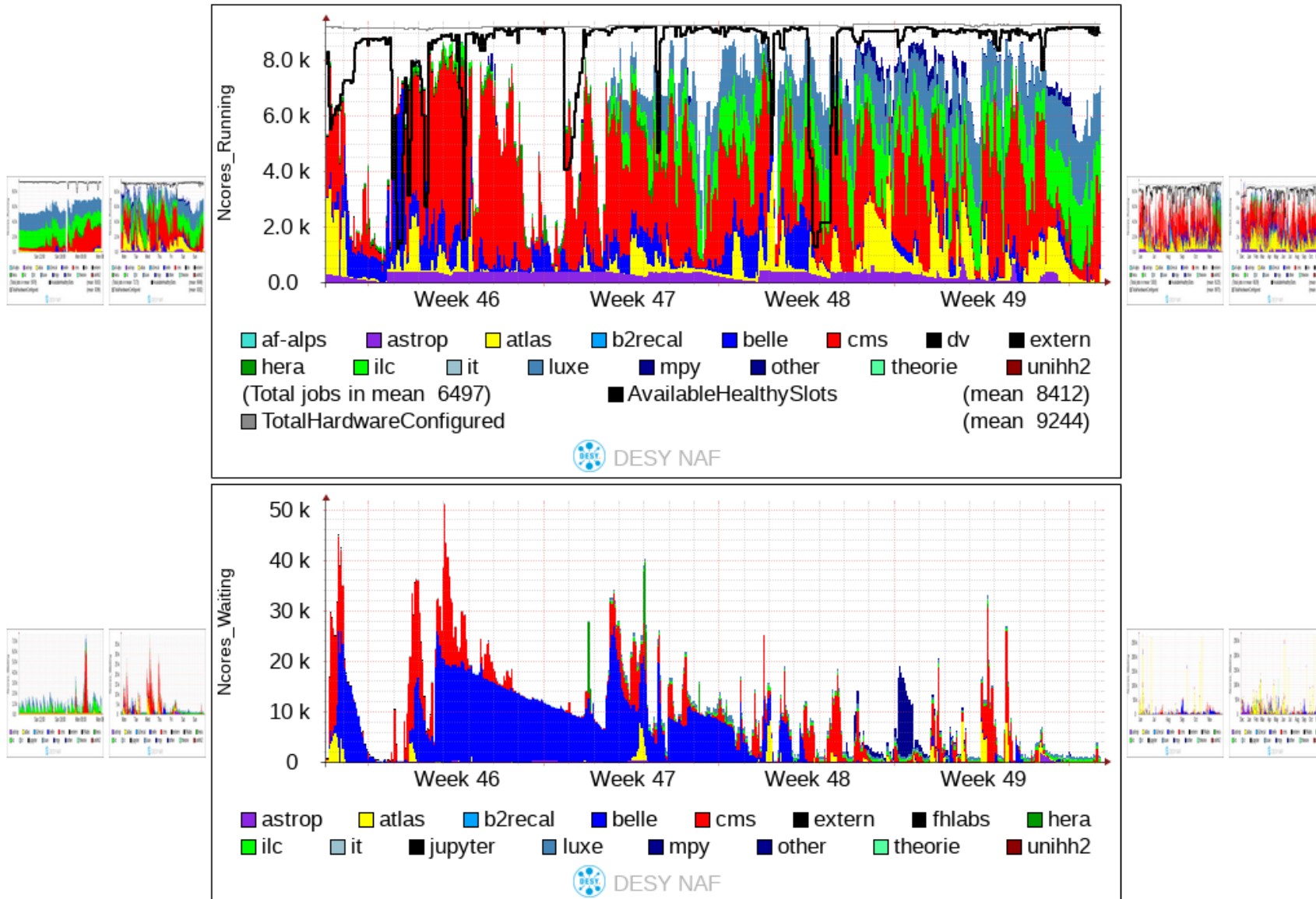
**Cores over time, different states:**



# BIRD HTCondor jobs in last month

**Caveat: These plots are work in progress!**

**Cores over time, different states:**



# lxsim updates

## **Simulation with track removal after they reach certain volumes (dump, shielding):**

- cmake option: -DUSE\_LX\_FAST\_SIM=ON
- Default is OFF;
- Volumes where particles are removed: BeamDumpAssembly, Shielding, GammaBeamDumpAssembly, HICSDumpAssembly, HICSDump2T, ComptShieldingConcrete, ComptShieldingPlate.

## **Simulation with timing cut:**

- cmake option: -DUSE\_LX\_TRACK\_TIMING\_CUT=N  
where is time in ns, N: 100.0  
Also units can be indicated explicitly: N: 10.0\*ms
- For background in electron-laser setup with timing cut of 100 us or 100 ns the simulation time is about 10%-15% shorter.

**The RunInfo tree in output file contains the information about these settings**

## **Simulation with modified size and material of the photon dump**

/lxphoton/det/GammaBeamDumpZ	1000.0 mm
/lxphoton/det/GammaBeamDumpMaterial	Copper

## **Making test with Geant4 version 11.1:**

- changes in settings of optical properties for materials;
- Change in settings for EM processes;
- Expected improvements in hadronic process.