# 1: Cosmic Frontier Computing

## Co-chairing a committee on Cosmic Frontier computing

- From KA23 comparative lab review recommendations
- HEP-Overall.A: Across the Cosmic Frontier program, an integrated plan for computing is needed for the operations phases of all experiments, including the science planning and analysis to address the primary HEP science goals. As for the dark matter projects in HEP-DM.1, the host lab for the dark energy projects (SLAC for LSST; LBNL for DESI) should oversee development of a draft computing plan for HEP roles and responsibilities by June 2017. **LBNL**, working with **NERSC**, and in coordination with **other labs involved**, should lead the **development of an integrated plan for all the Cosmic Frontier experiments** by the end of 2018.

## Initial reports from surveys of experiment computing contacts

- Focused on nuts and bolts of CPU & disk needs vs. time;
  some discussion of opportunities & challenges identified in surveys of experiments
- Opportunity for buying a dedicated rack @ NERSC for exclusive use by Cosmic Frontier
  — by no means a guaranteed opportunity, but there could be big benefits for human efficiency

## Final report in progress; could coordinate with CV whitepaper

- Fleshing out the opportunities & challenges with recommendations
- Opinions welcome: **StephenBailey@lbl.gov**

# 2: Cosmology Data Repository

## Challenge

- Dataset X is public but...
  - It's only available behind a website with files downloadable 1 at a time
- We host public data but...
  - catalogs only, not pixel-level data; limited CPU-hours available to N>>1 users
- Related: Dawson/Melchior tri-agency pixel-level processing talk yesterday

## Opportunity: Cosmology Data Repository at NERSC

- Co-host multiple cosmologically useful datasets
  - Include pixel-level data, not just catalogs
- At an HPC center with millions of CPU hours potentially available
  - Seed funding from DOE / Lali Chatterjee (thanks!); additional buy-in from SDSS & DESI

## Future Vision

- Facilitate cross-project pixel-level analyses for power-users
  - e.g. DESI target selection: 6 surveys, 3+ agencies, forward modeling of pixel-level data on 15k deg$^2$
- Cost sharing between projects & DOE for public data releases
  - e.g. if LSST wants to test on public DES data at NERSC, who should pay for the disk?
- Personnel support for curating datasets, software environment, HPC support
- Include simulations, CMB data, LSST, Euclid, WFIRST, ...