CMB research at KICC: from the early universe to galaxy evolution

Anthony Challinor on behalf of the CMBers
CMB people

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Irene Cabezas  Gerrit Farren  Frank Qu
CMB science: from the early universe to galaxy evolution
Planck temperature
Forthcoming ACT DR6 temperature
Forthcoming ACT DR6 maps

- 40% of sky at 90, 150 and 220 GHz
- 10x data volume of DR4
- Polarisation (2–3)x sensitivity of Planck
CMB lensing maps from ACT DR6

- 2x lower reconstruction noise than Planck
  - New cross-split estimator to mitigate noise complications
- 10,000 deg²
- Comparable constraining power to Planck
  - State-of-the-art $S_8$ and $\sum m_\nu$ constraints from combination (+BAO)

Led by Blake’s ERC group
Simons Observatory

- 3 US SATs + 2 UK SATs + 1 JPN SAT for B-mode science
- 40% of sky with arcmin-resolution LAT survey overlapping DES, DESI, Rubin and LSST
- Six frequencies: 27–280 GHz
- First data in 2023!

SO:UK (£18M UKRI infrastructure fund + STFC)
- 2x SATs
- 1x UHF optics tube for LAT
- UK data centre serving science-ready data products
- @CAM: LAT simulations and product readiness for lensing science