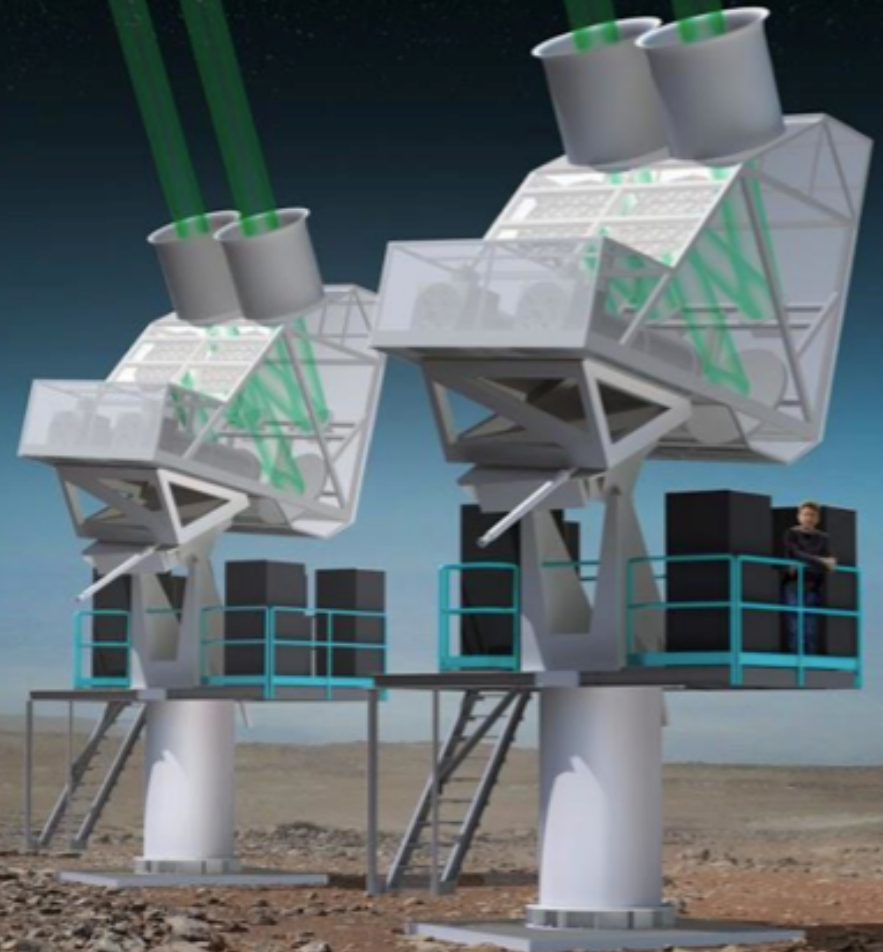
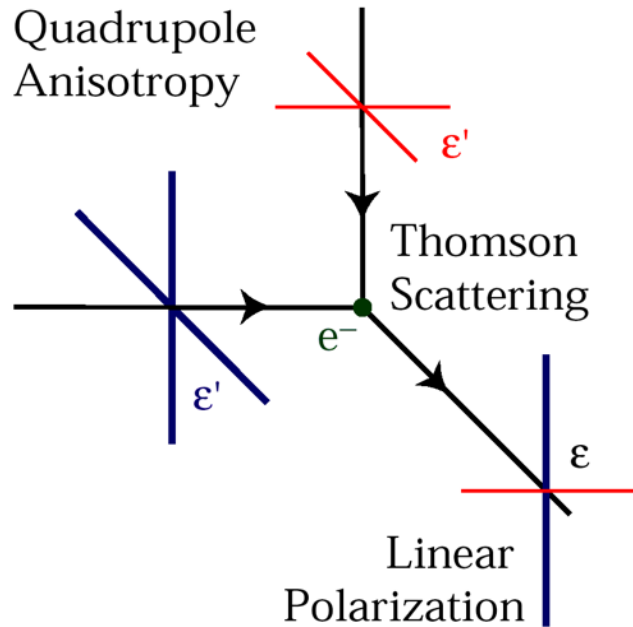


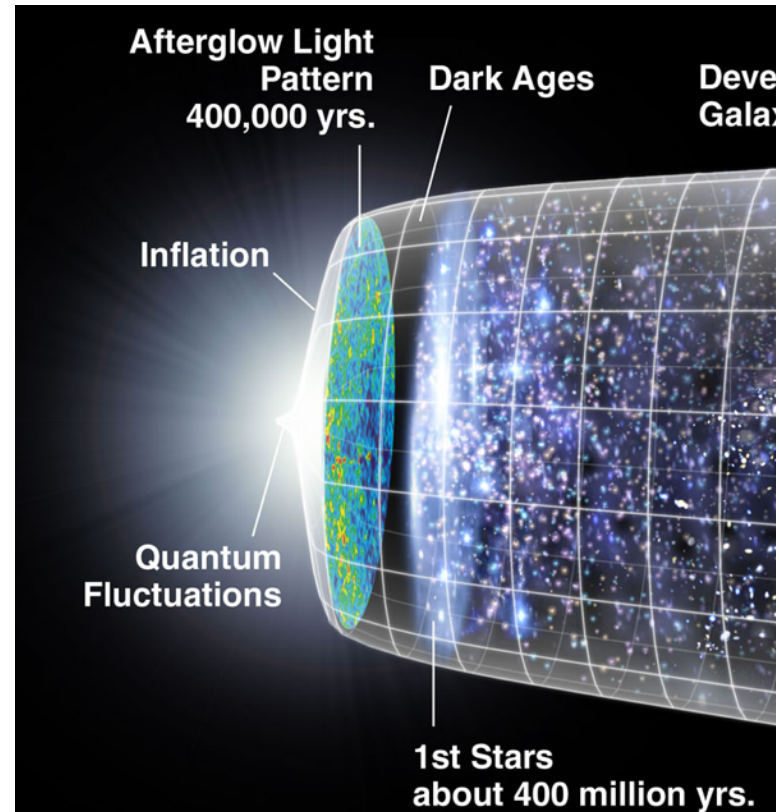
Constraining Inflation and Neutrino Mass with CLASS



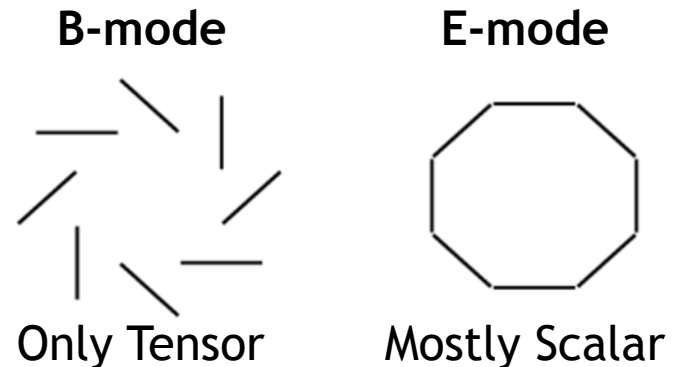
1 CMB polarized by Thomson scattering of electrons by a CMB temperature quadrupole



2 Free electrons available at recombination and reionization

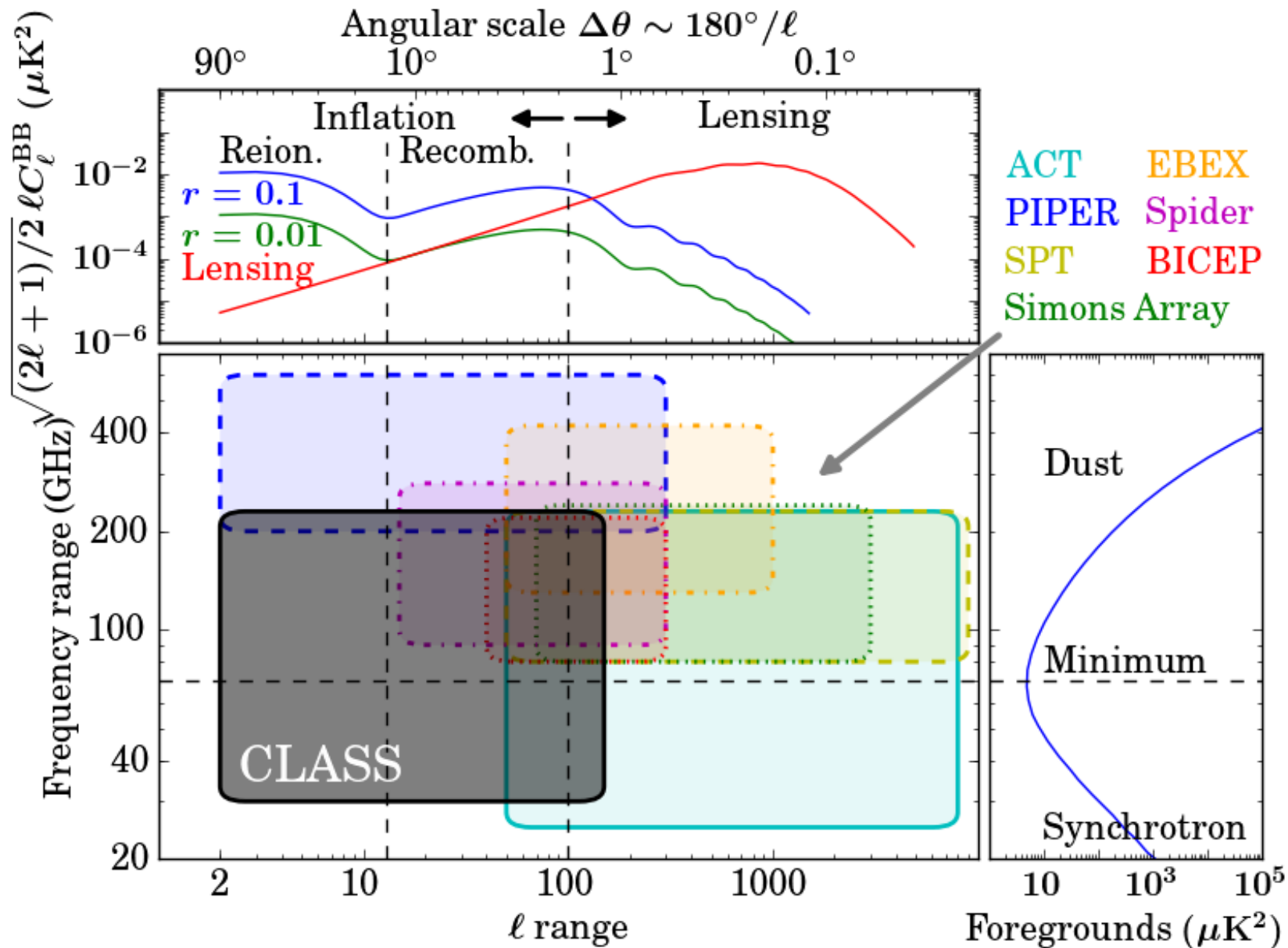


3 CMB temperature quadrupoles from density waves (scalars; amplitude A_s) and gravitational waves (tensors; amplitude r)



CLASS

A Unique B-mode Measurement
to Characterize Inflation



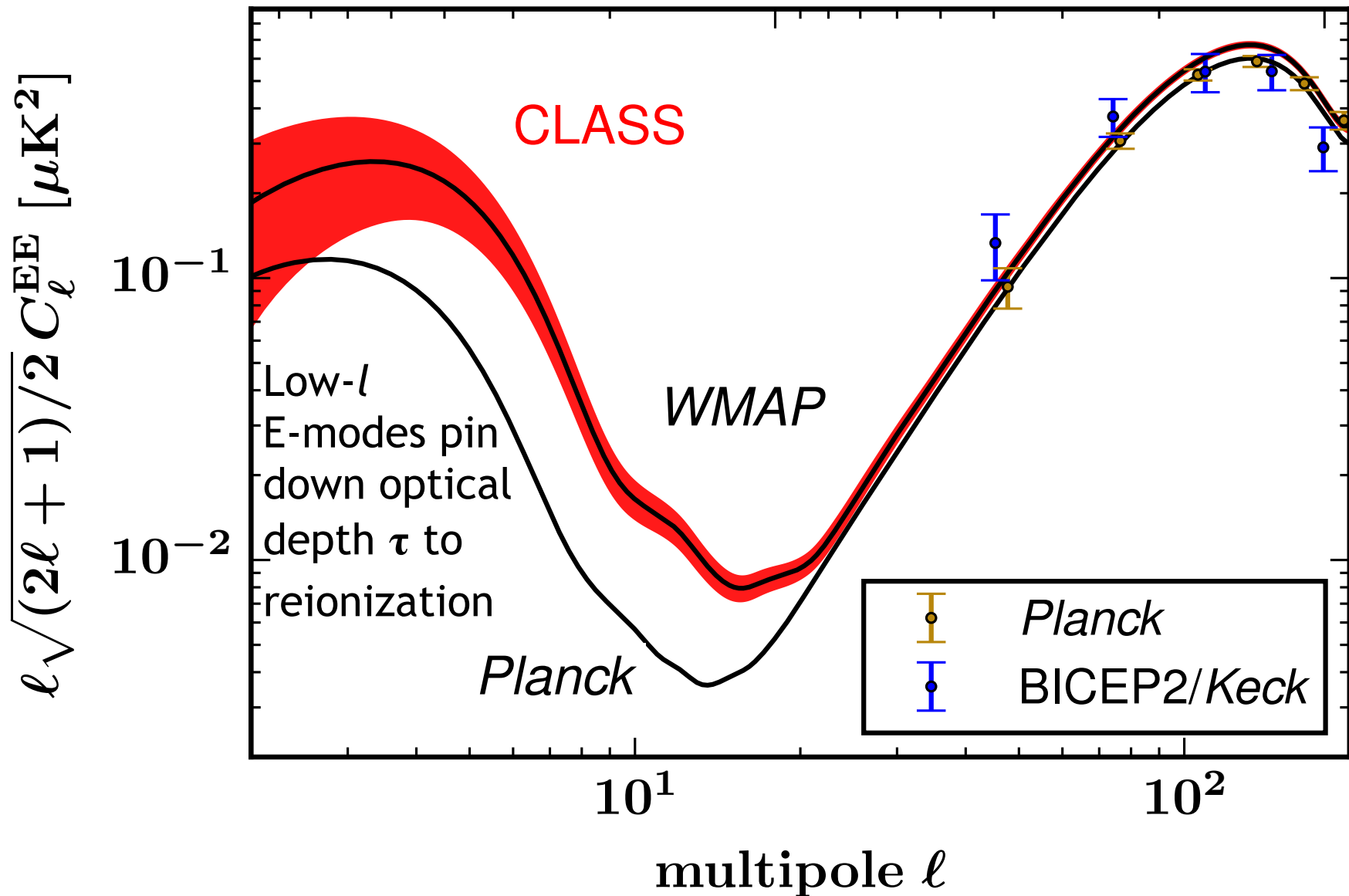
CLASS

Pinning Down Reionization
with low- l E-modes

90°

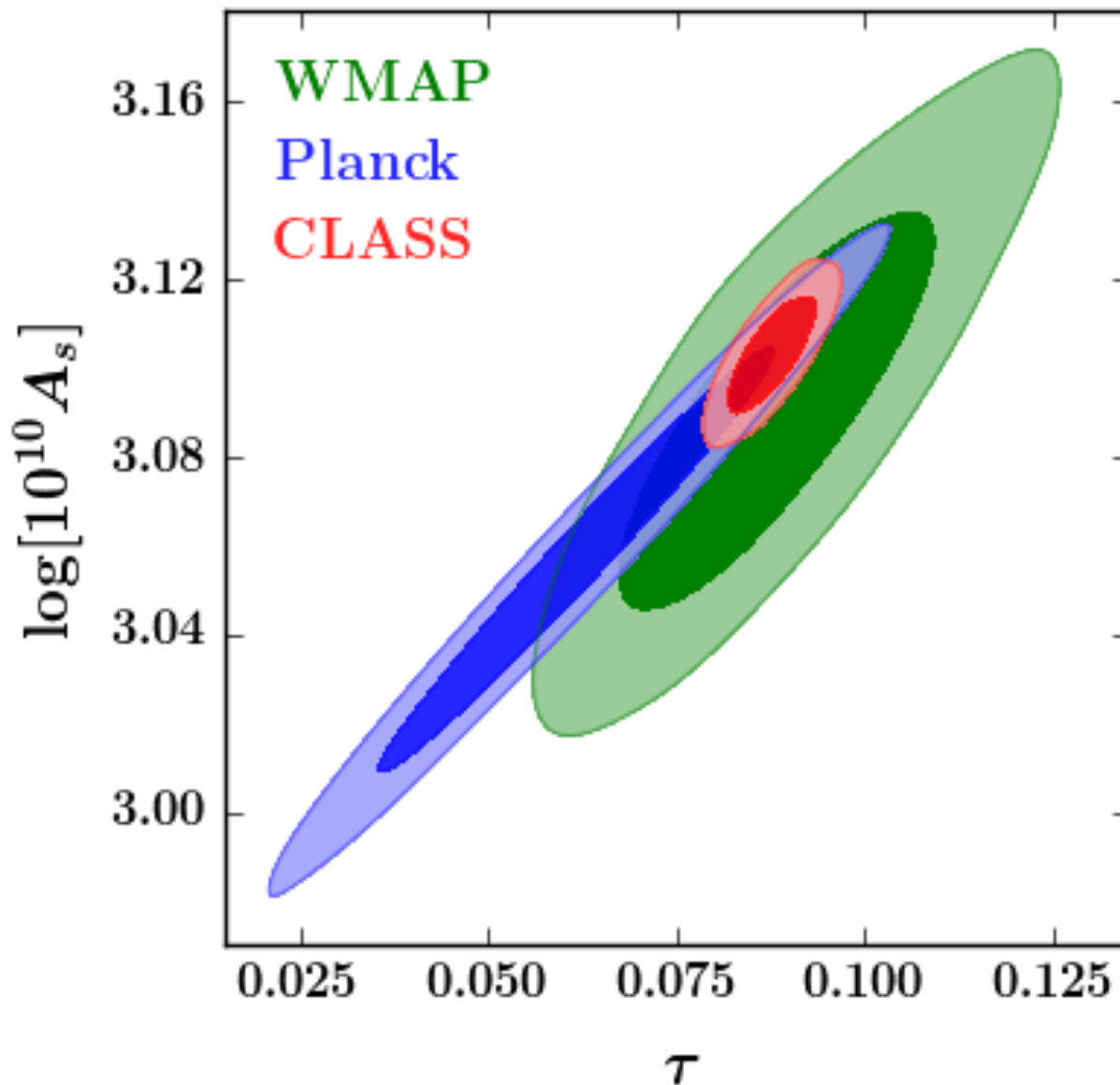
10°

1°



CLASS

τ Constraint Improves
Scalar Amplitude A_s Estimate

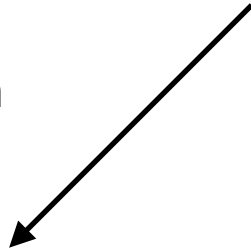


CLASS

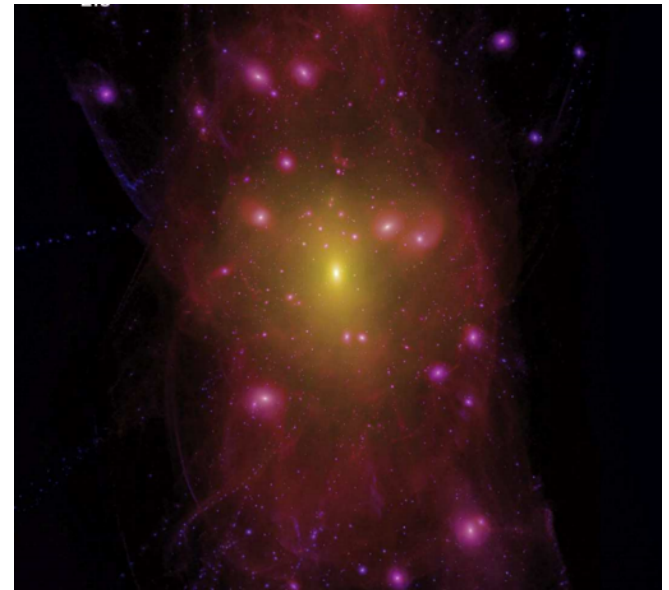
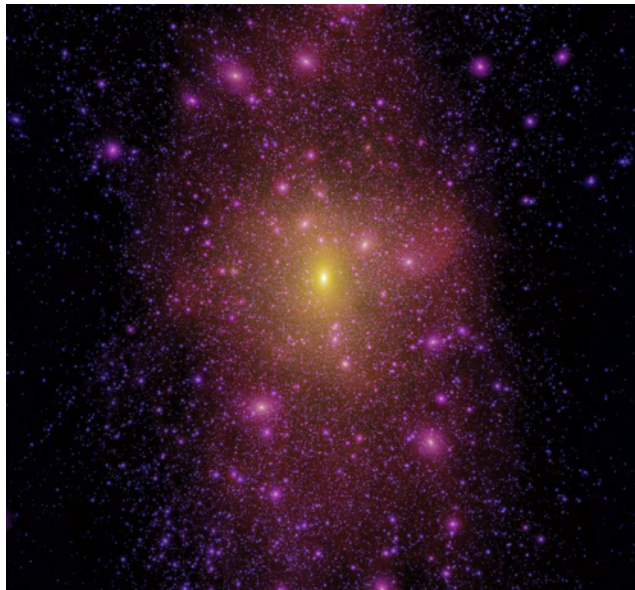
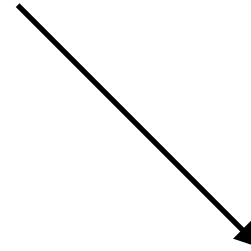
Neutrino Mass Constraints

Primordial Scalar Perturbation (A_s)

Less Mass in
Neutrinos

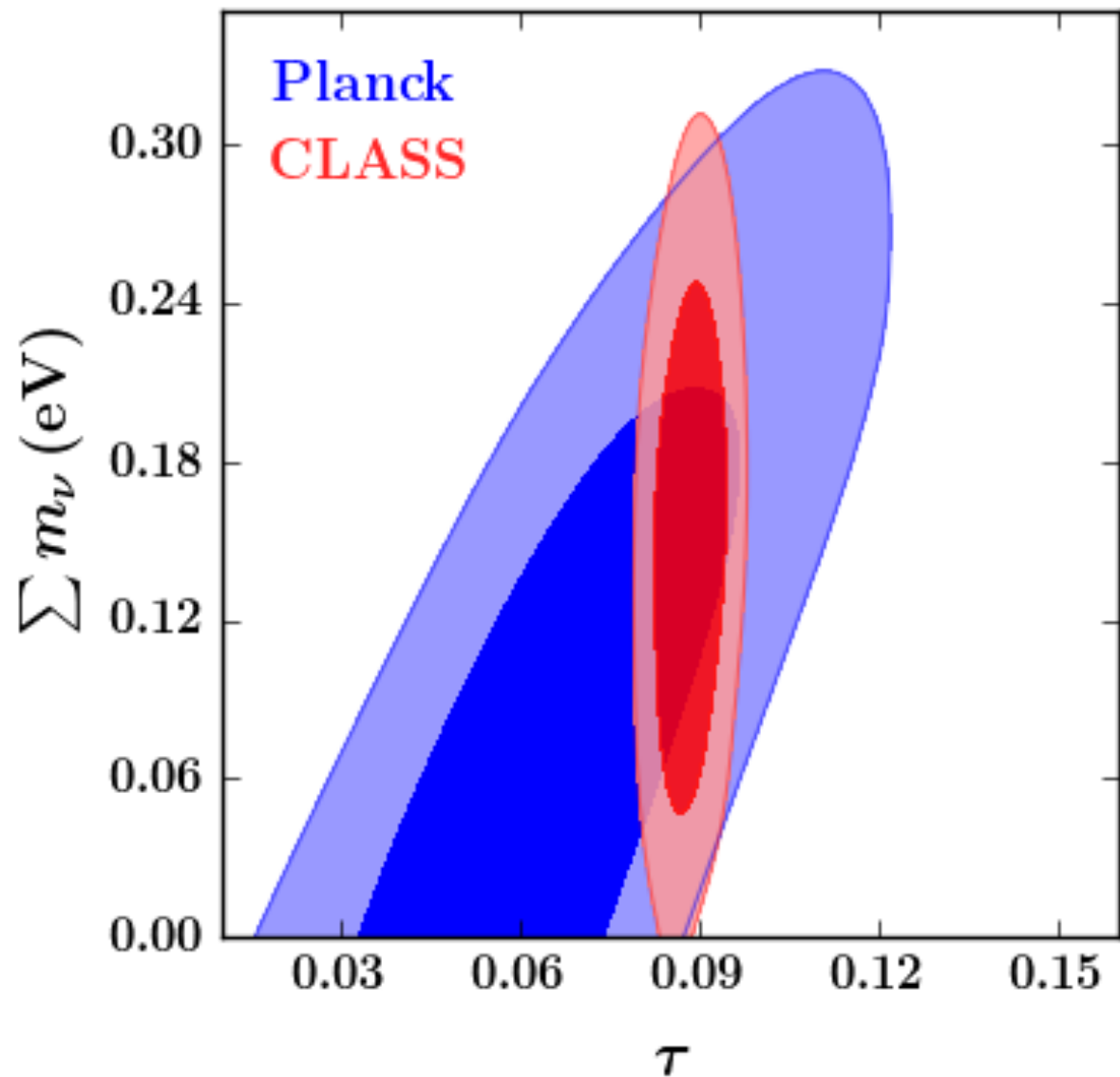


More Mass in
Neutrinos

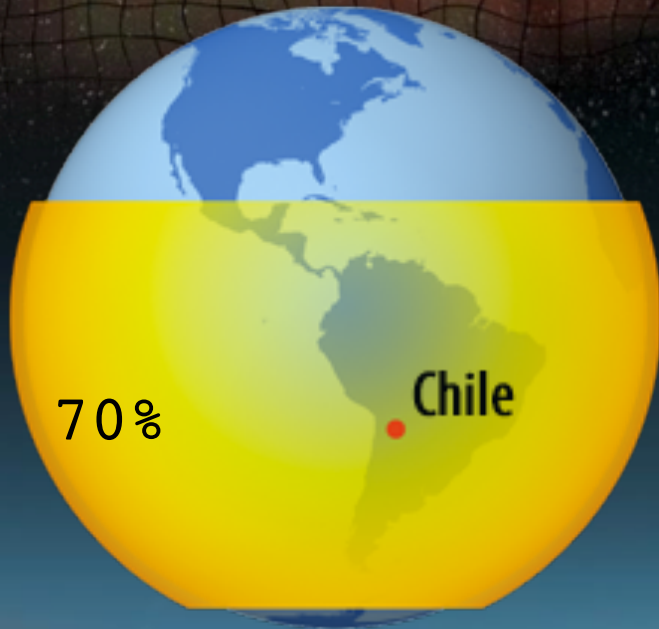


CLASS

Neutrino Mass Constraints



CLASS



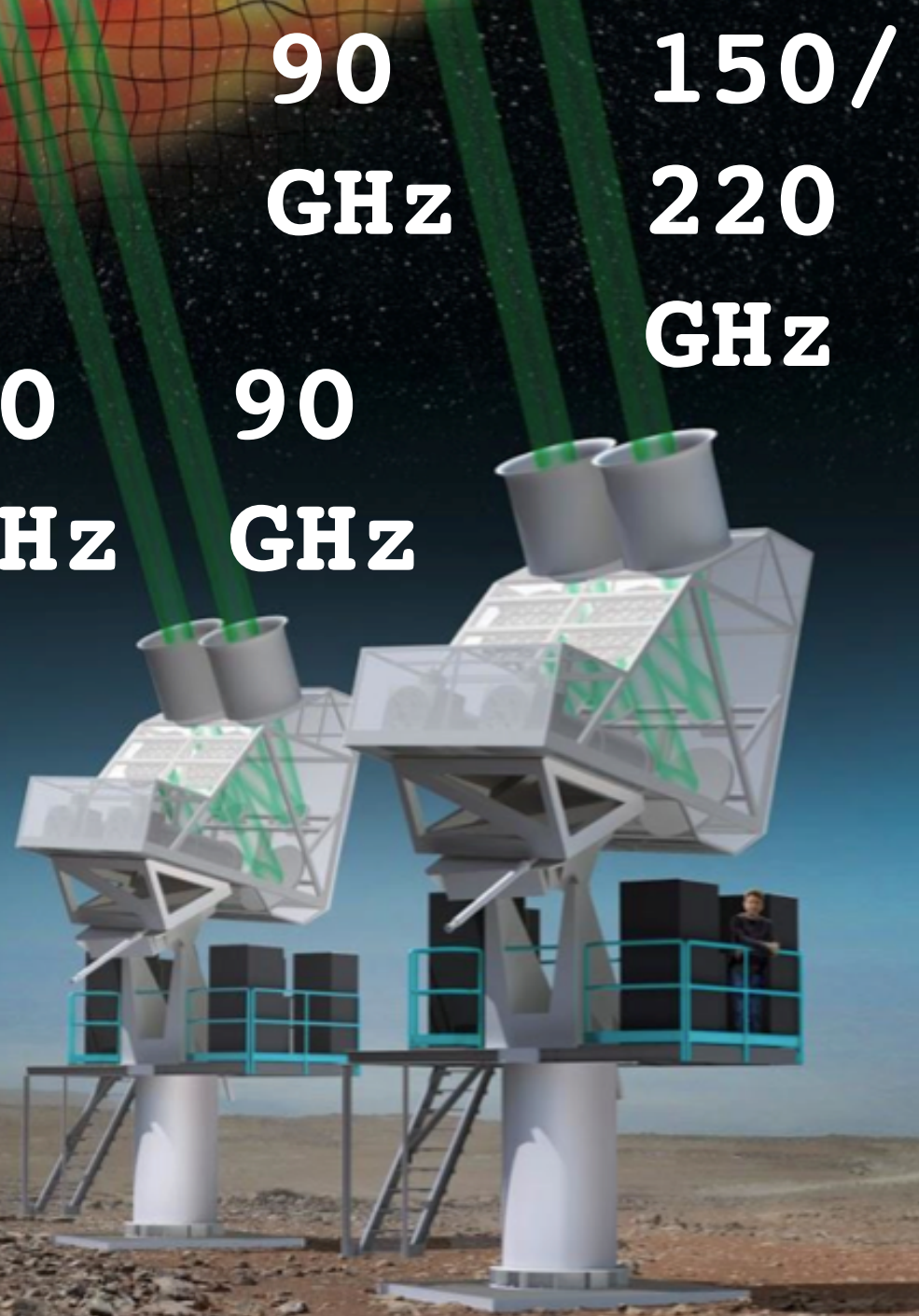
Large Survey
to Measure
Large Angles

40
GHz

90
GHz

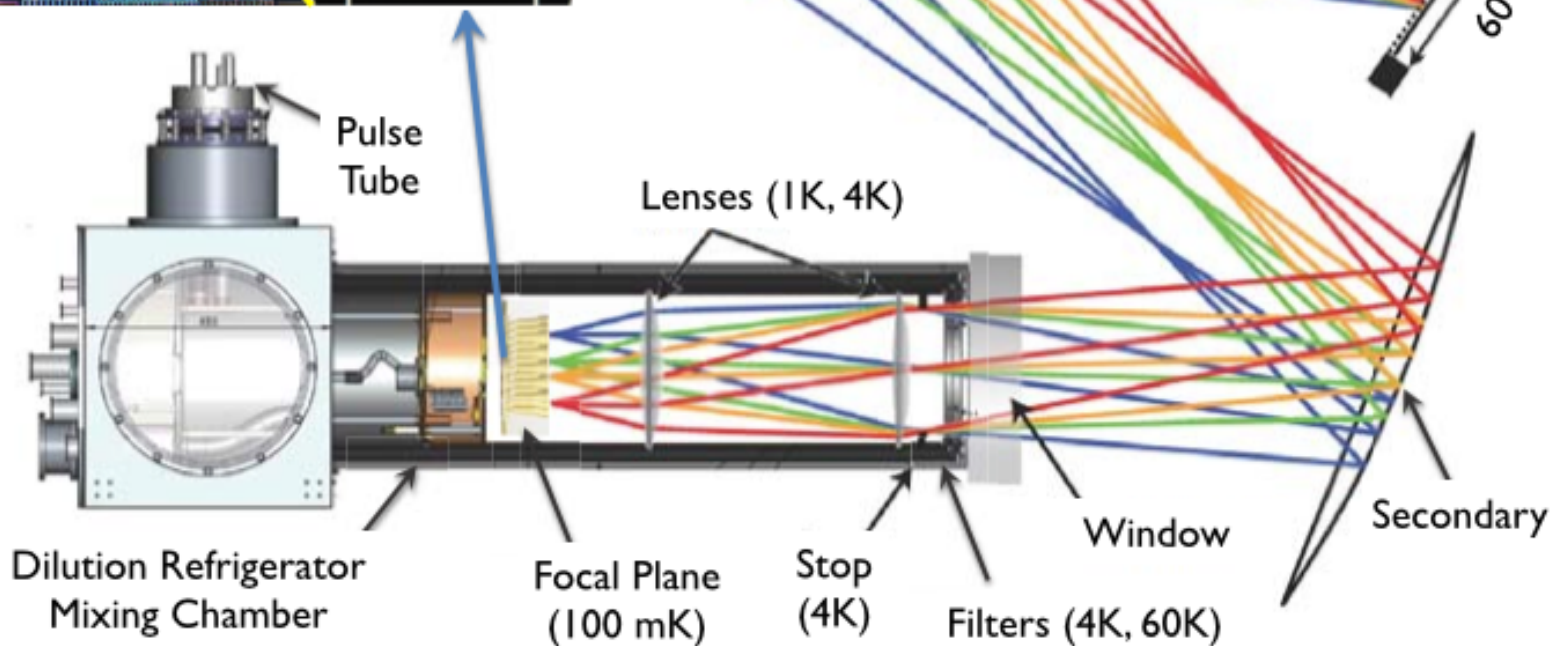
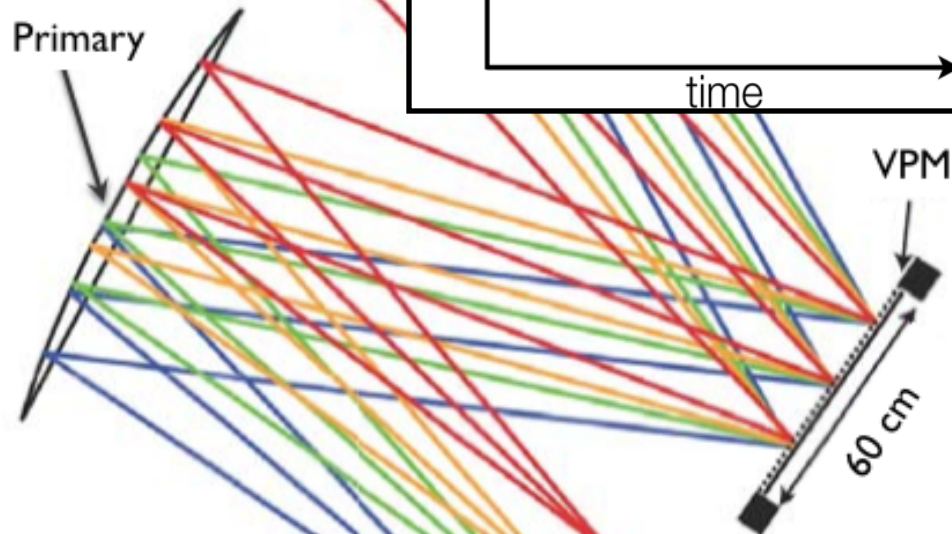
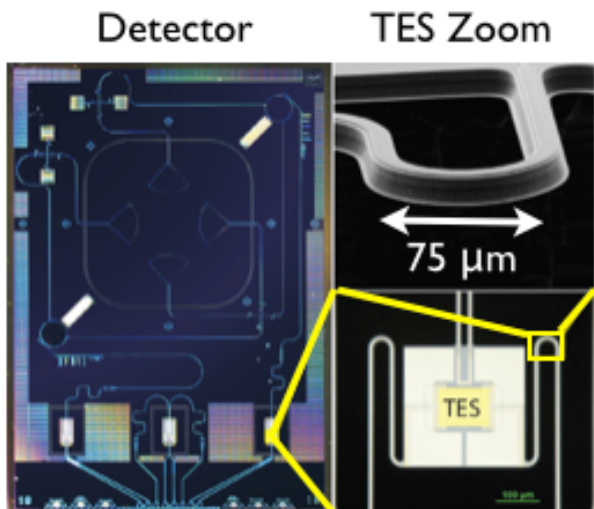
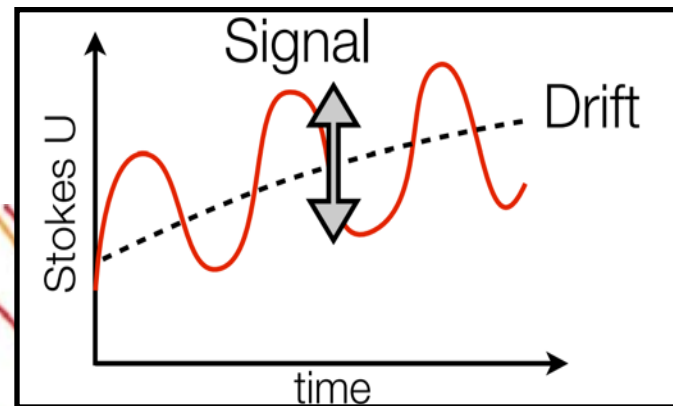
90
GHz

150/
220
GHz



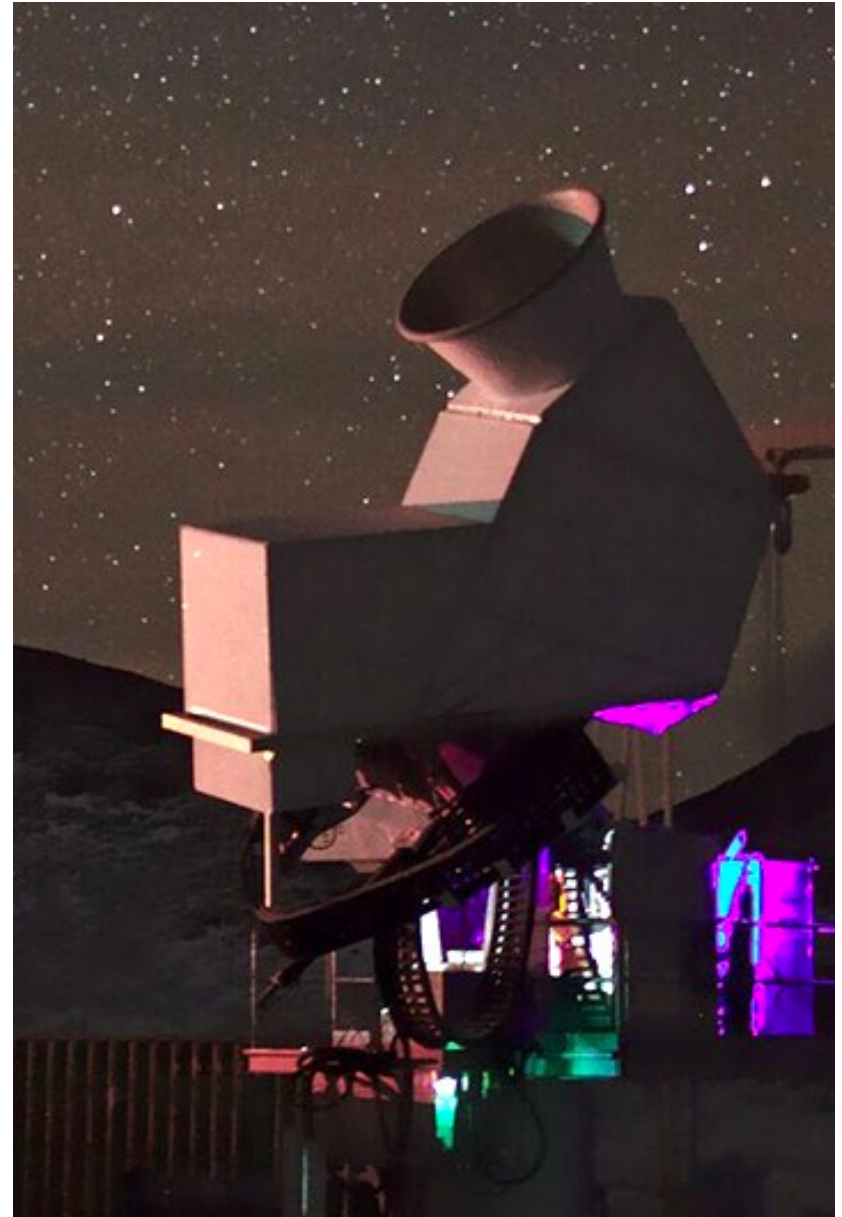
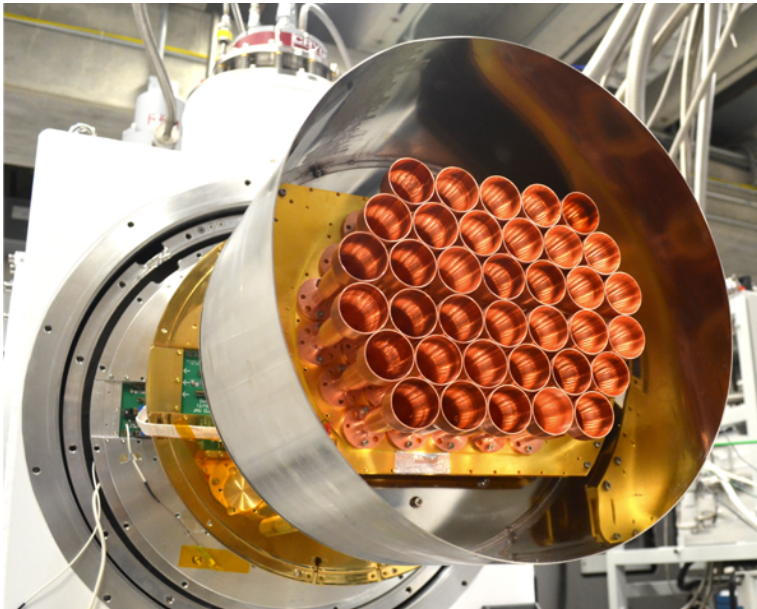
CLASS

Stability



CLASS

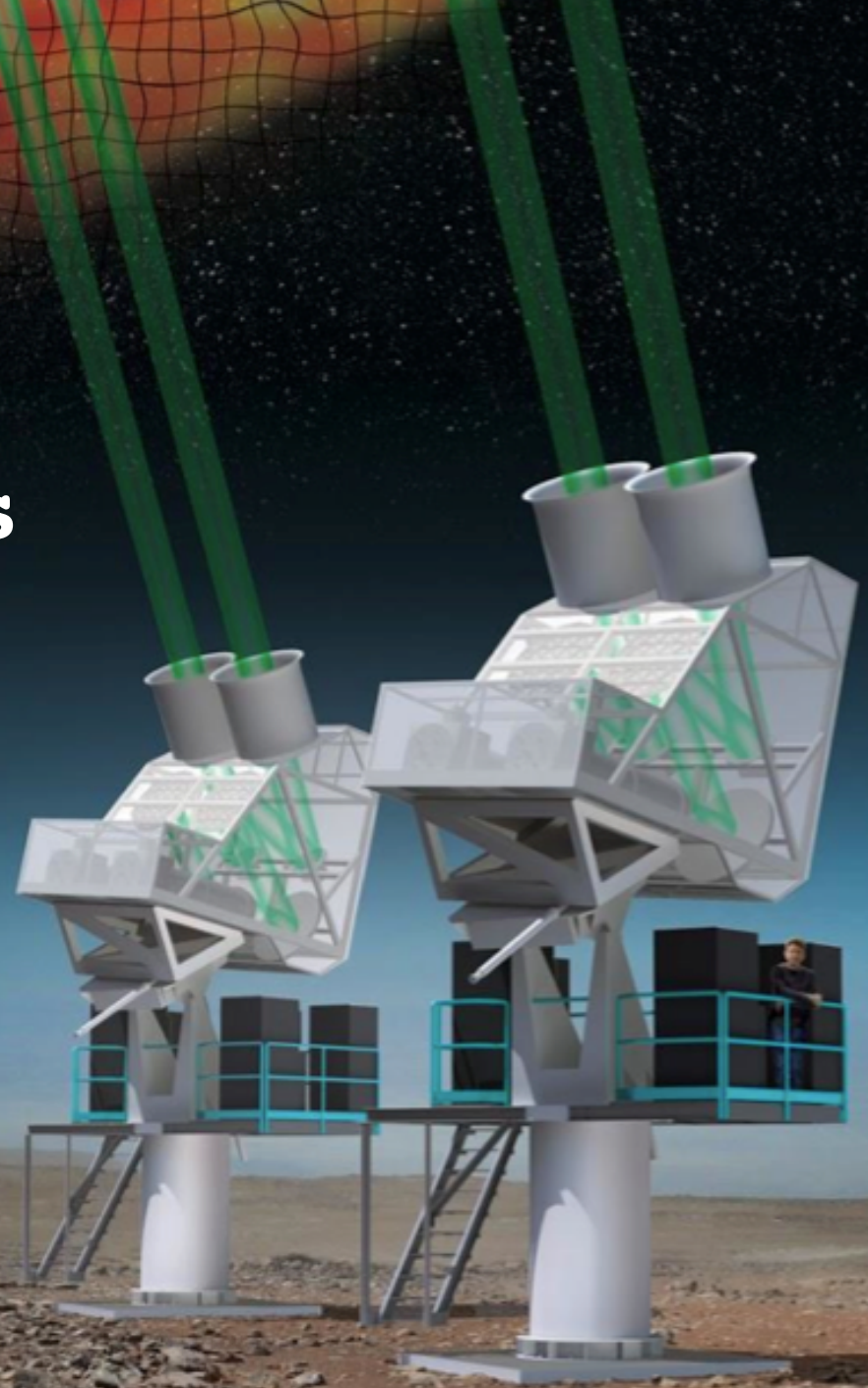
First light for the
40 GHz Telescope!



What's Next?

**Deployment of
Other Telescopes**

**5-year Survey
(2016–2021)**

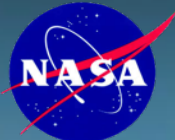


Stay Tuned!

<http://sites.krieger.jhu.edu/class/>



JOHNS HOPKINS
UNIVERSITY



NIST



V

M

