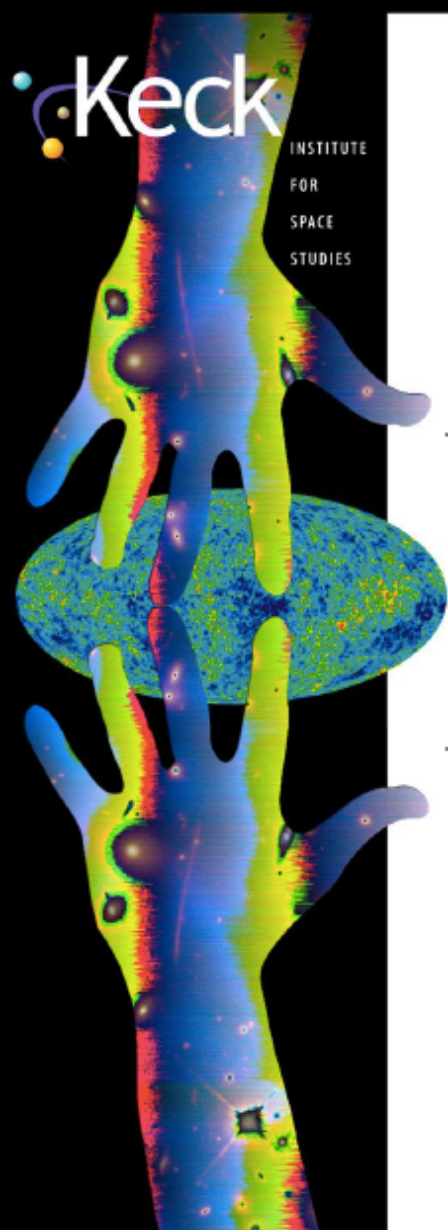




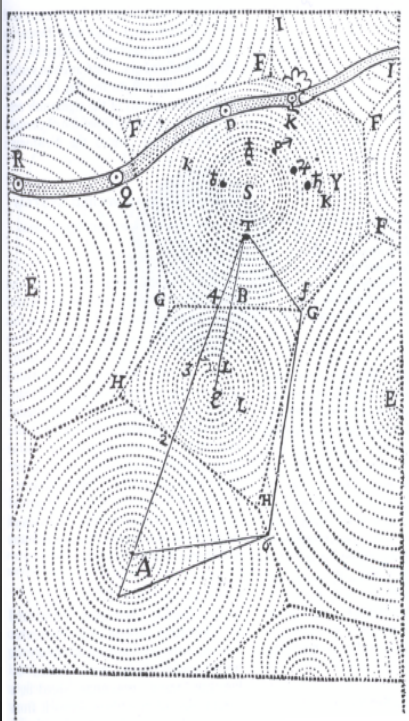
Painting a picture of the Cosmos

Graça Rocha
JPL/Caltech

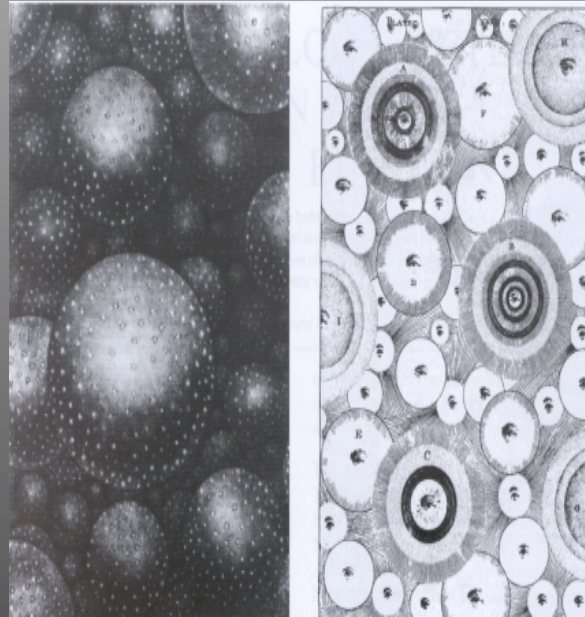
'The Whys and Hows of future CMB exploration'
KISS, Caltech 19th March 2018

Cosmology: the Journey

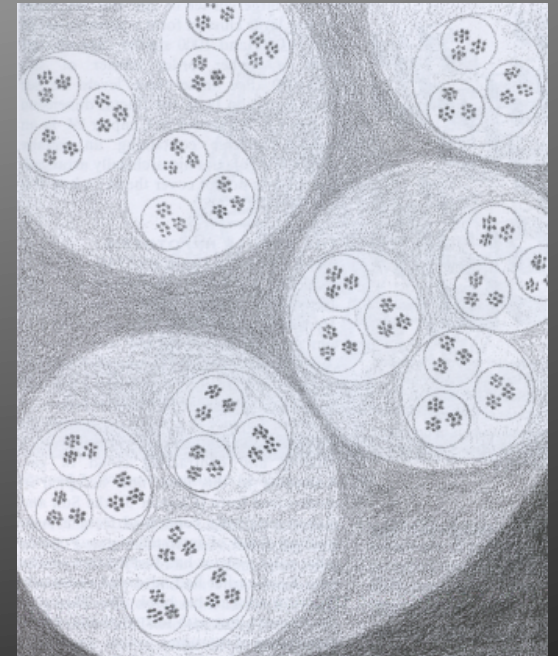
From early speculations without quantitative observational support



Descartes *The World* (1636)



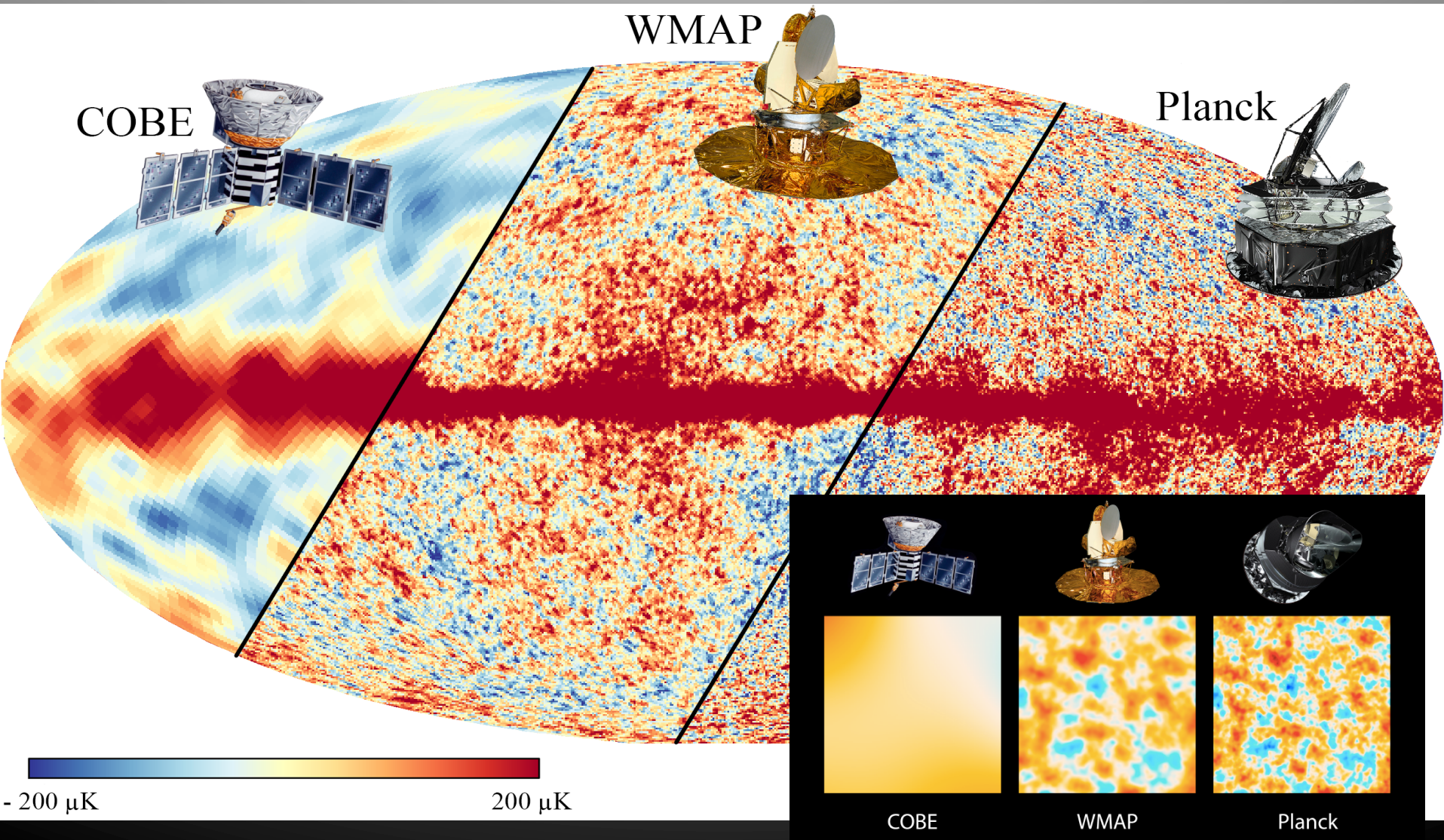
Wright *An Original
Theory of the Universe*
(1750)



The hierarchical (fractal) Universe of Kant
(1755) and Lambert (1761)

Cosmology: the Journey

To the era of Precision Cosmology with observations of the CMB

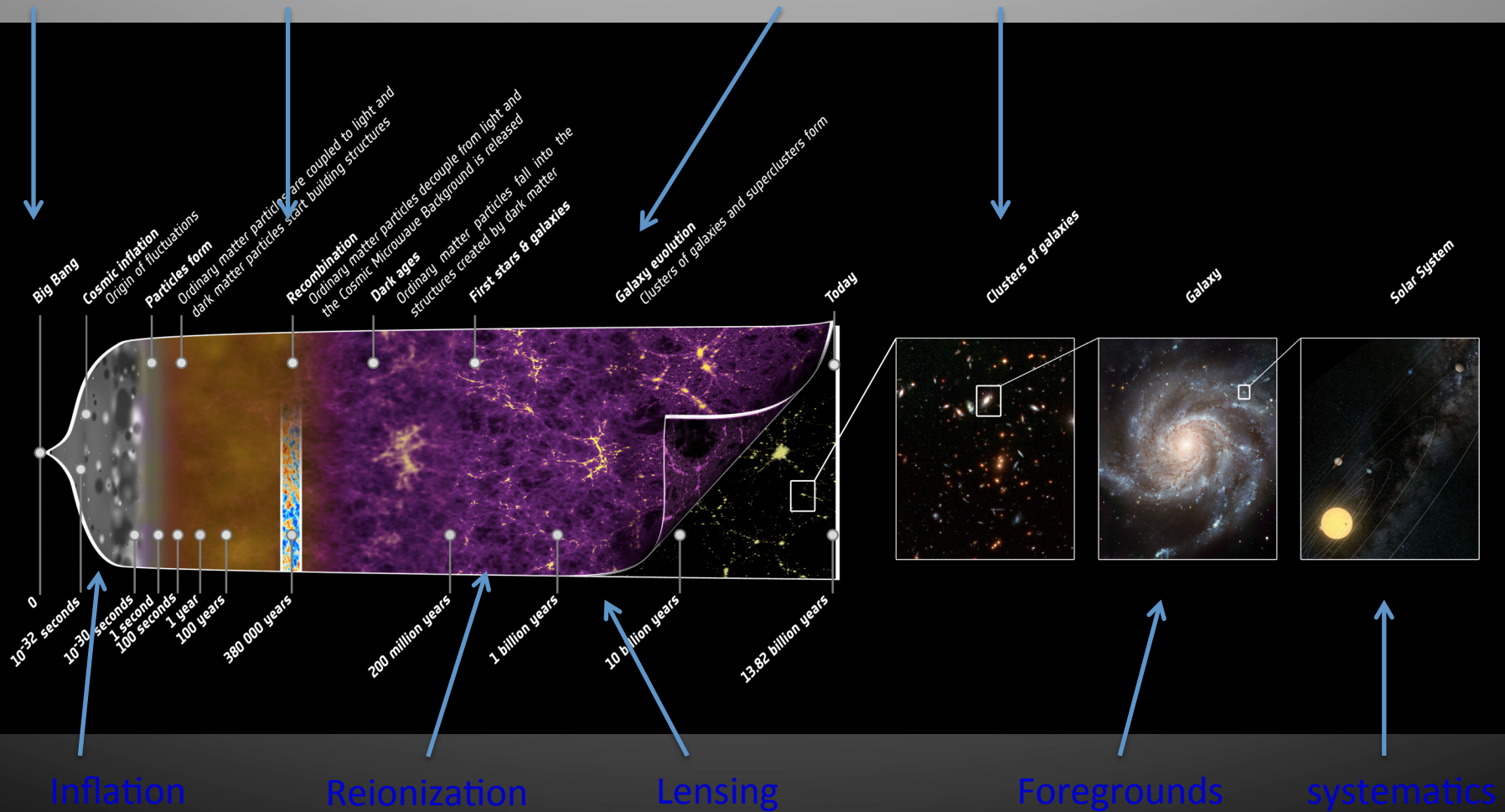


Our picture of the Universe

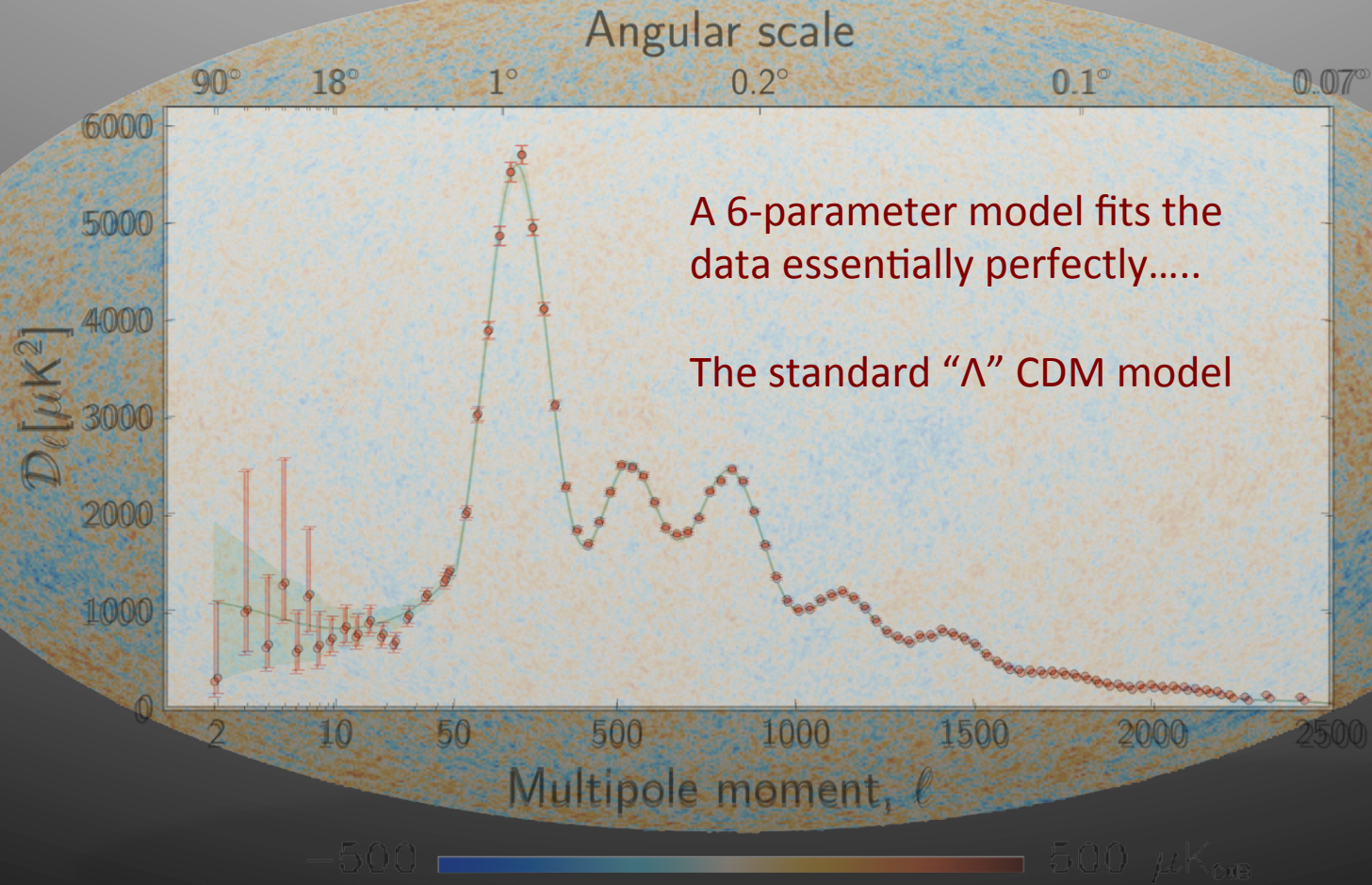
Big Bang

Recombination

stars, galaxies, clusters of galaxies, superclusters

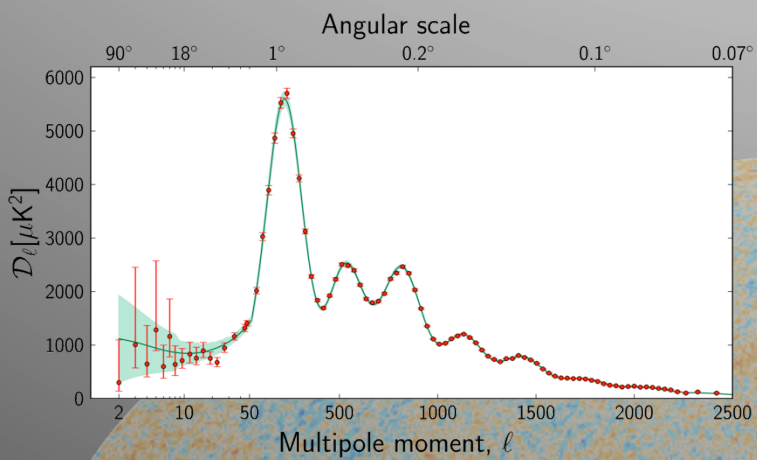


CMB

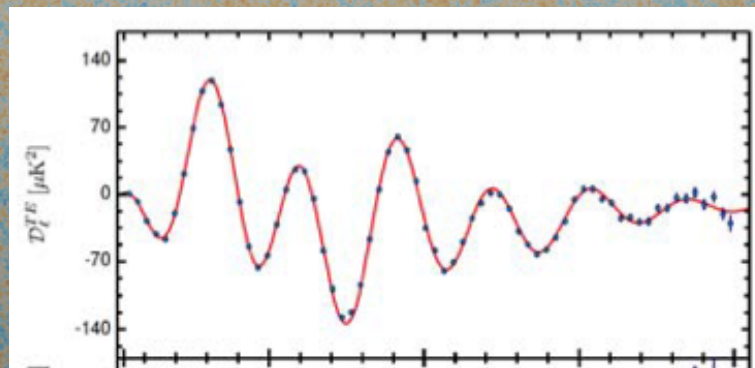


Temperature and Polarization

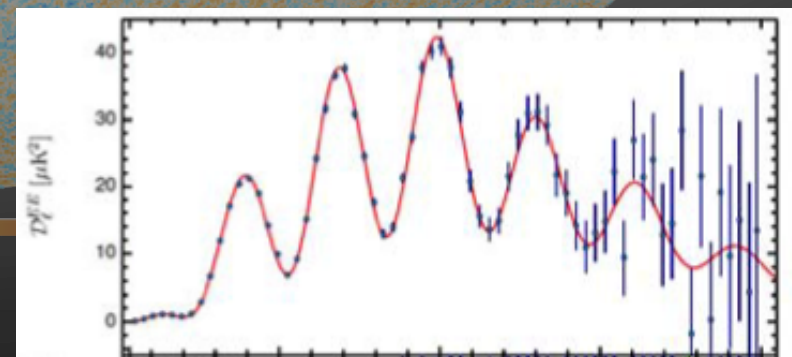
TT



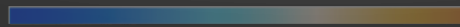
TE



EE



-500



CMB – what's next?

Our picture of the Cosmos is not complete yet.....

Inflation models predict a significant stochastic background of gravitational waves that should have left a faint polarized CMB signal

Currently joint analysis of Planck/BICEP/Keck only places limits on the amplitude of these signals

A detection of this gravity wave so-called **B-mode** signature would reveal fundamental physics at energy scales inaccessible to any terrestrial laboratory

So without further ado let us start !

The Whys and Hows of Future CMB exploration

