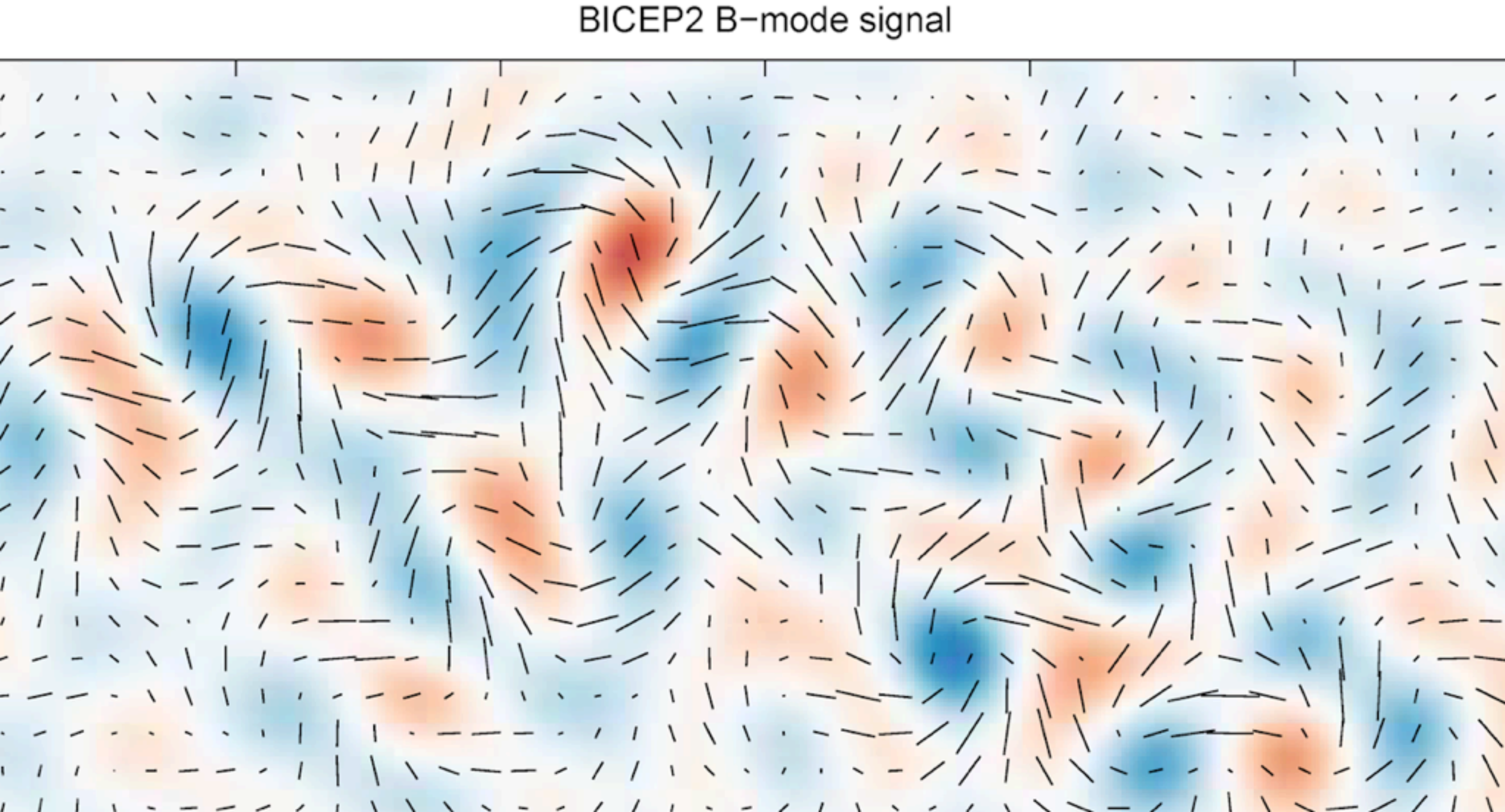
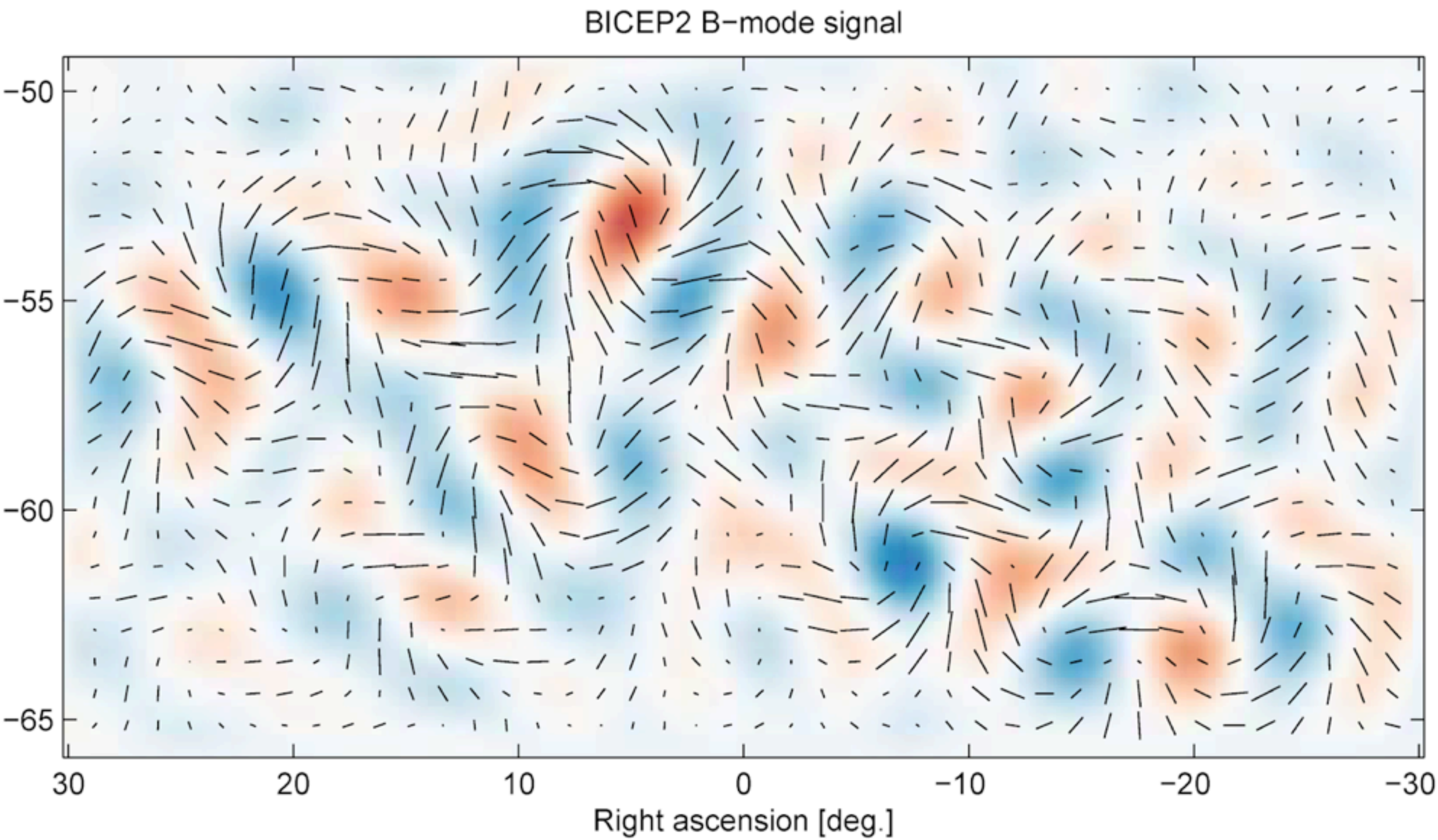
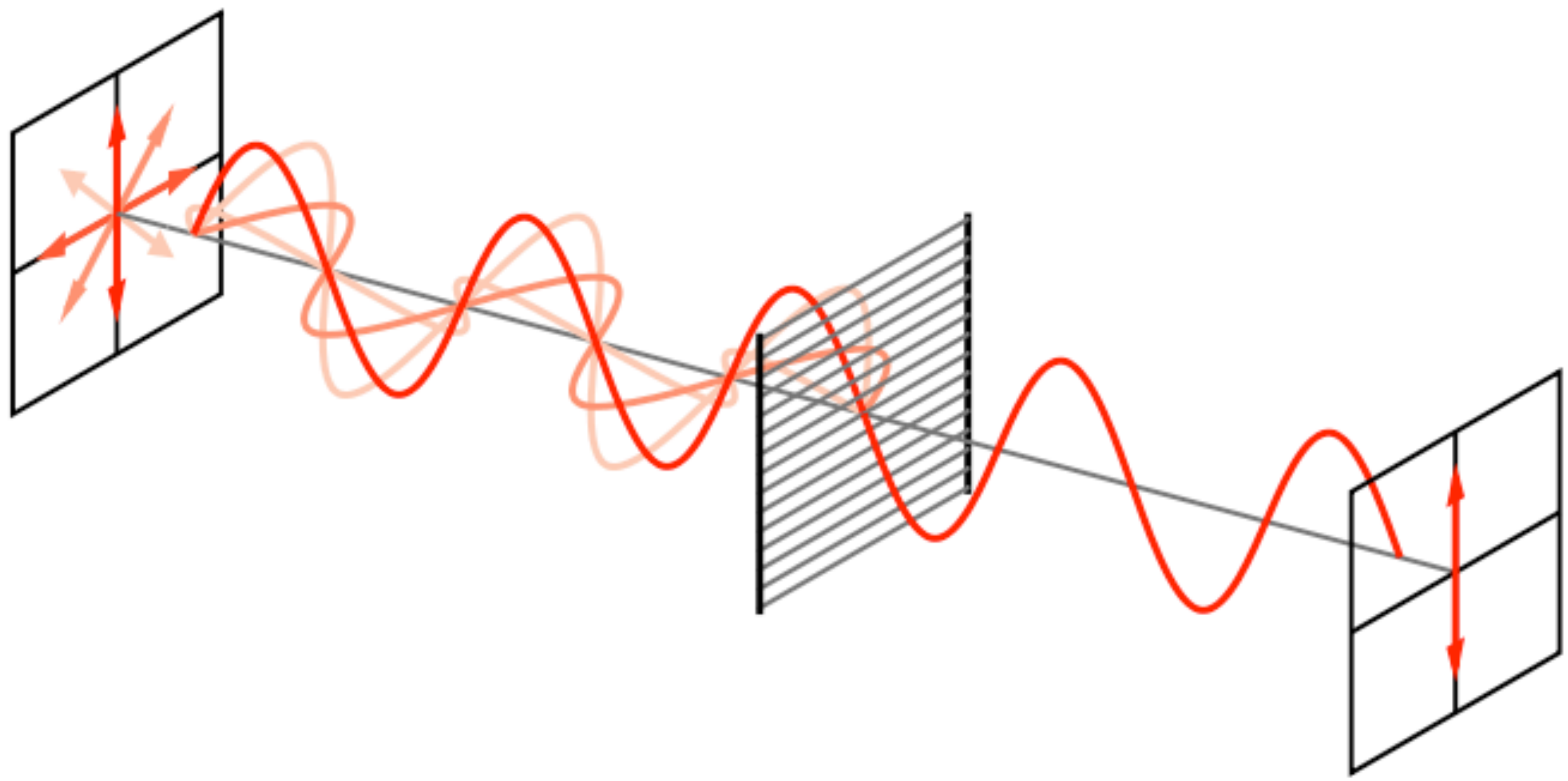
Polarización en el CMB

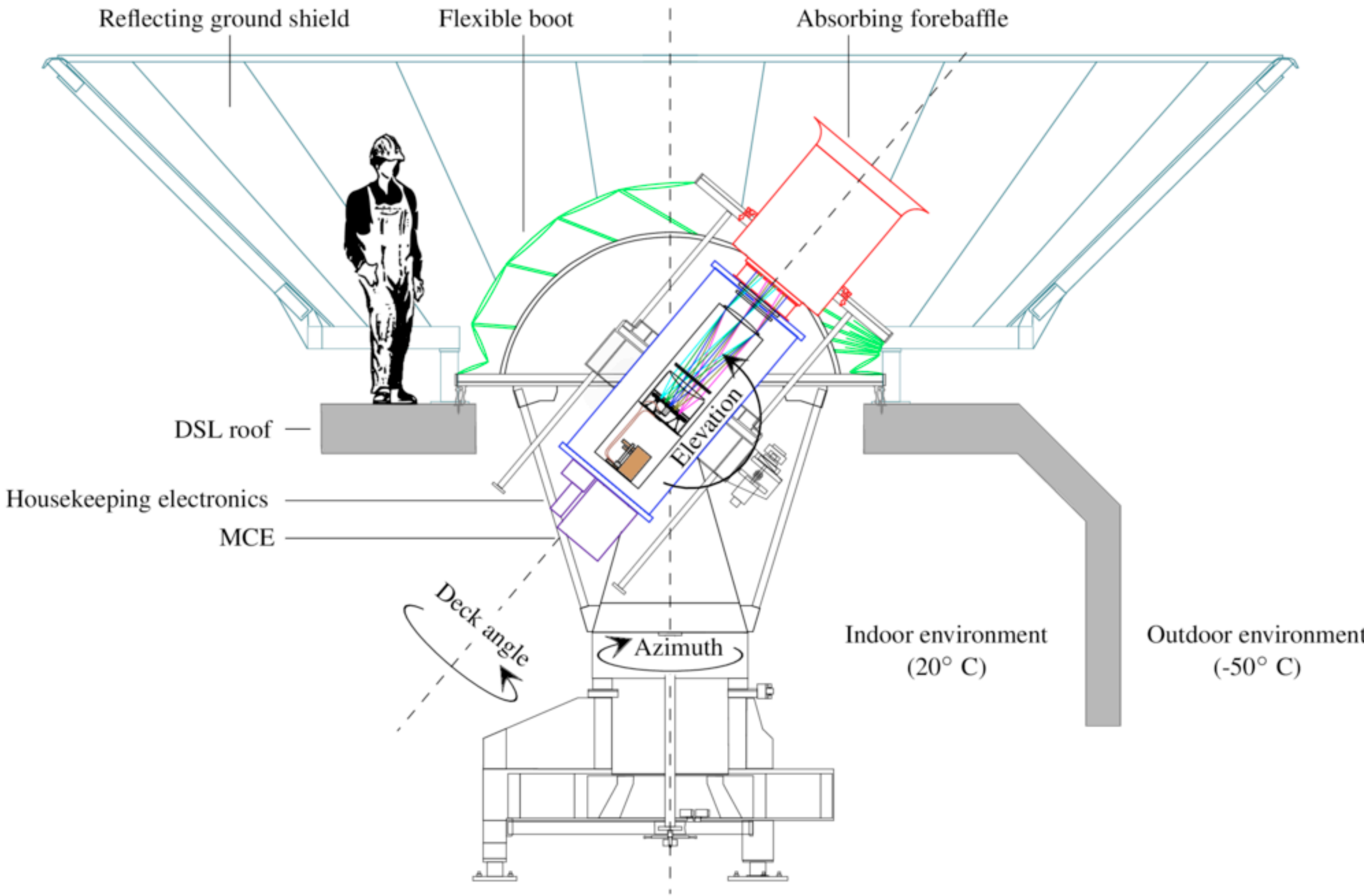




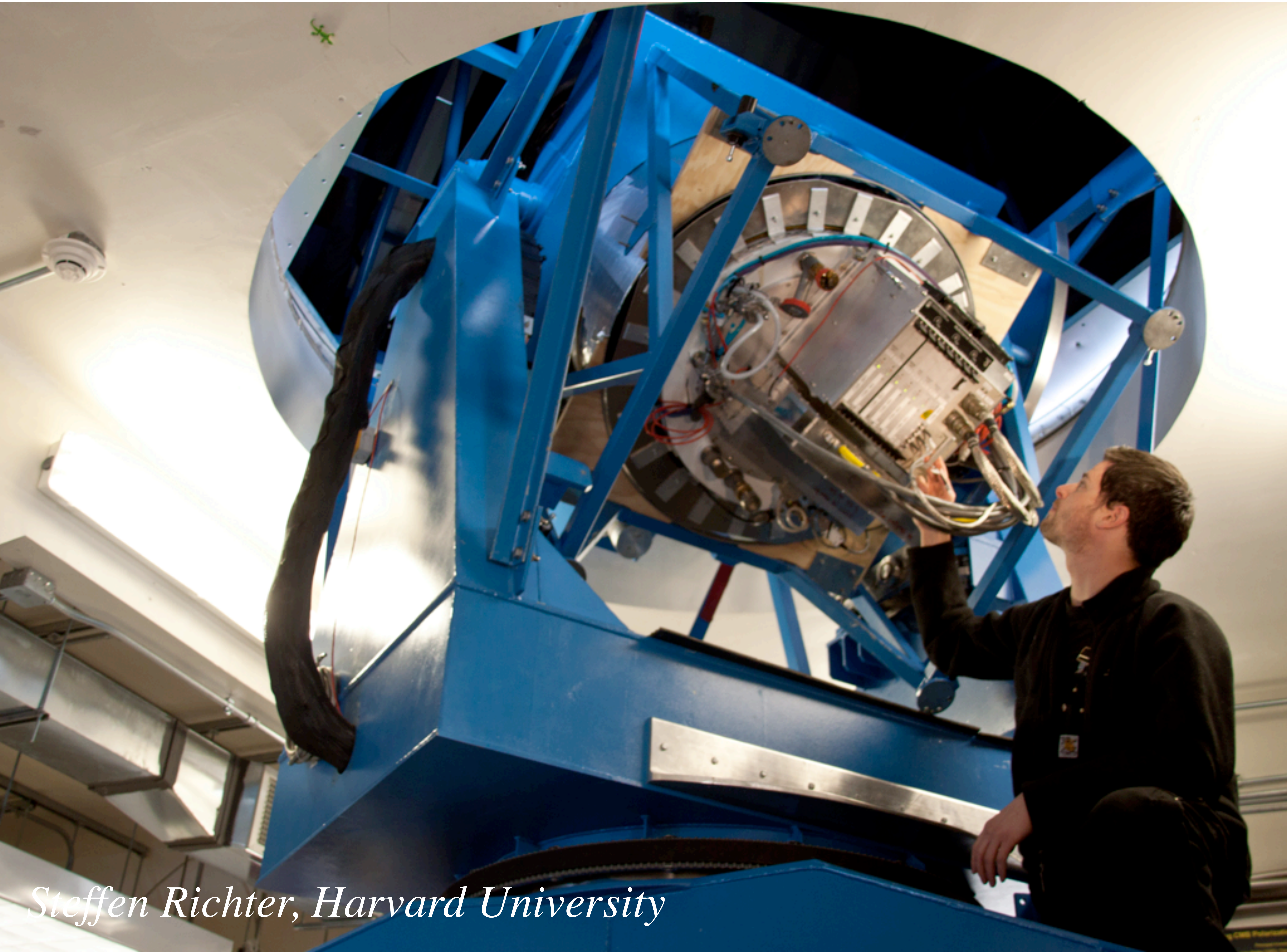
BICEP2 B−mode signal
−50
−55
−60
−65
30
20
10
0
−10
−20
−30
Right ascension [deg.]




Steffen Richter, Harvard University

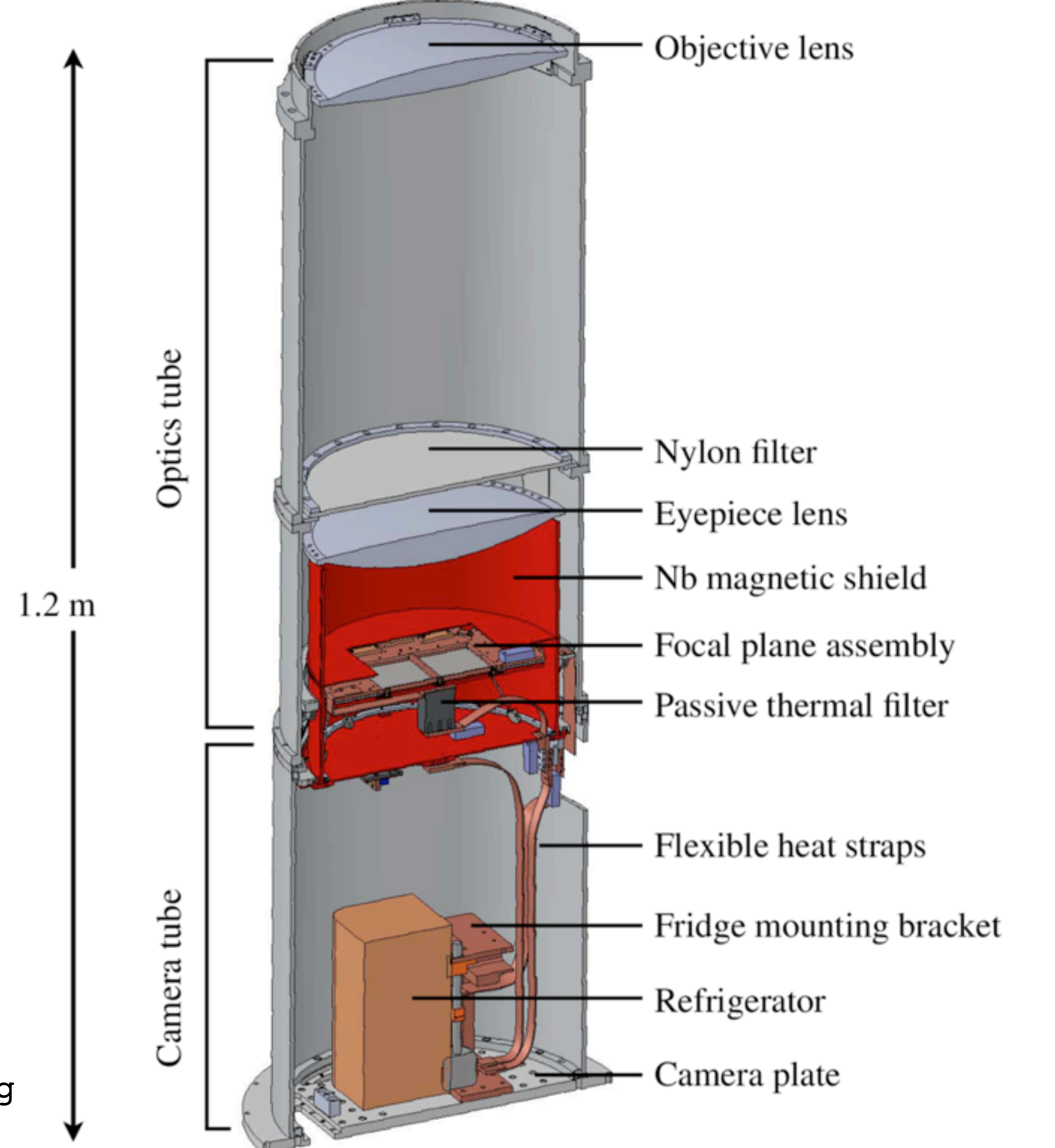


http://bicepkeck.org


Steffen Richter, Harvard University

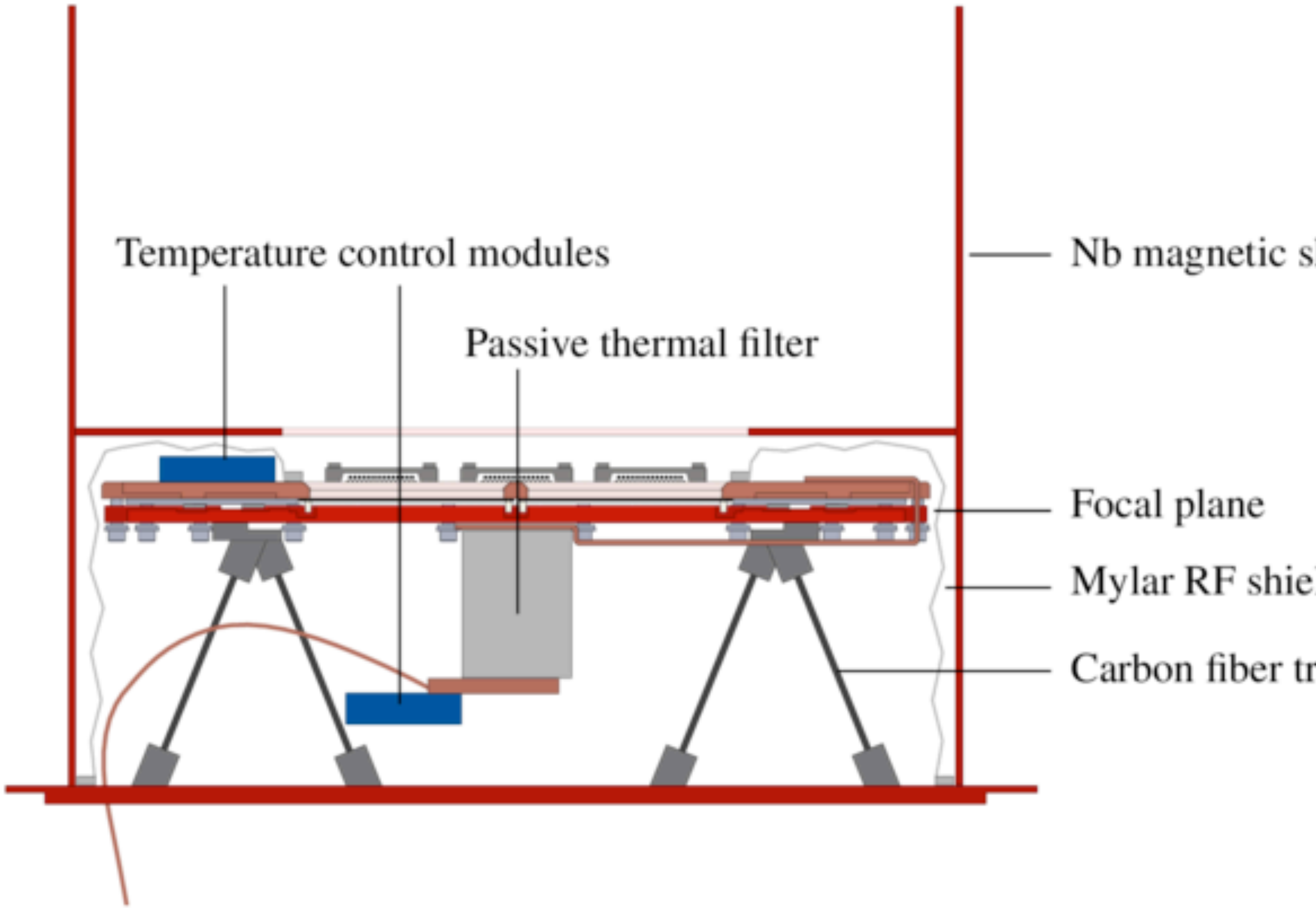
http://bicepkeck.org

Todo esto está enfriado a 4 K por un baño de Helio líquido

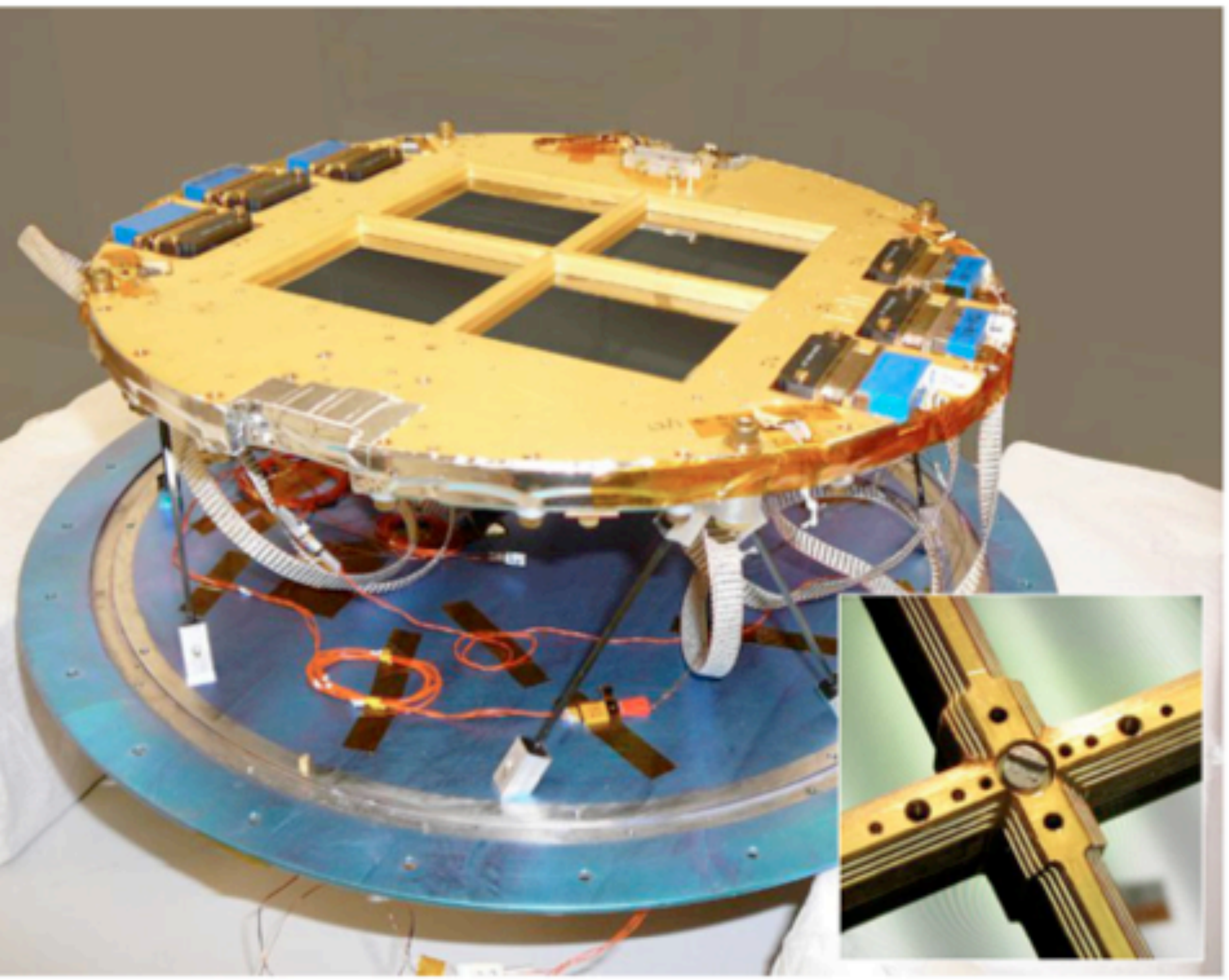


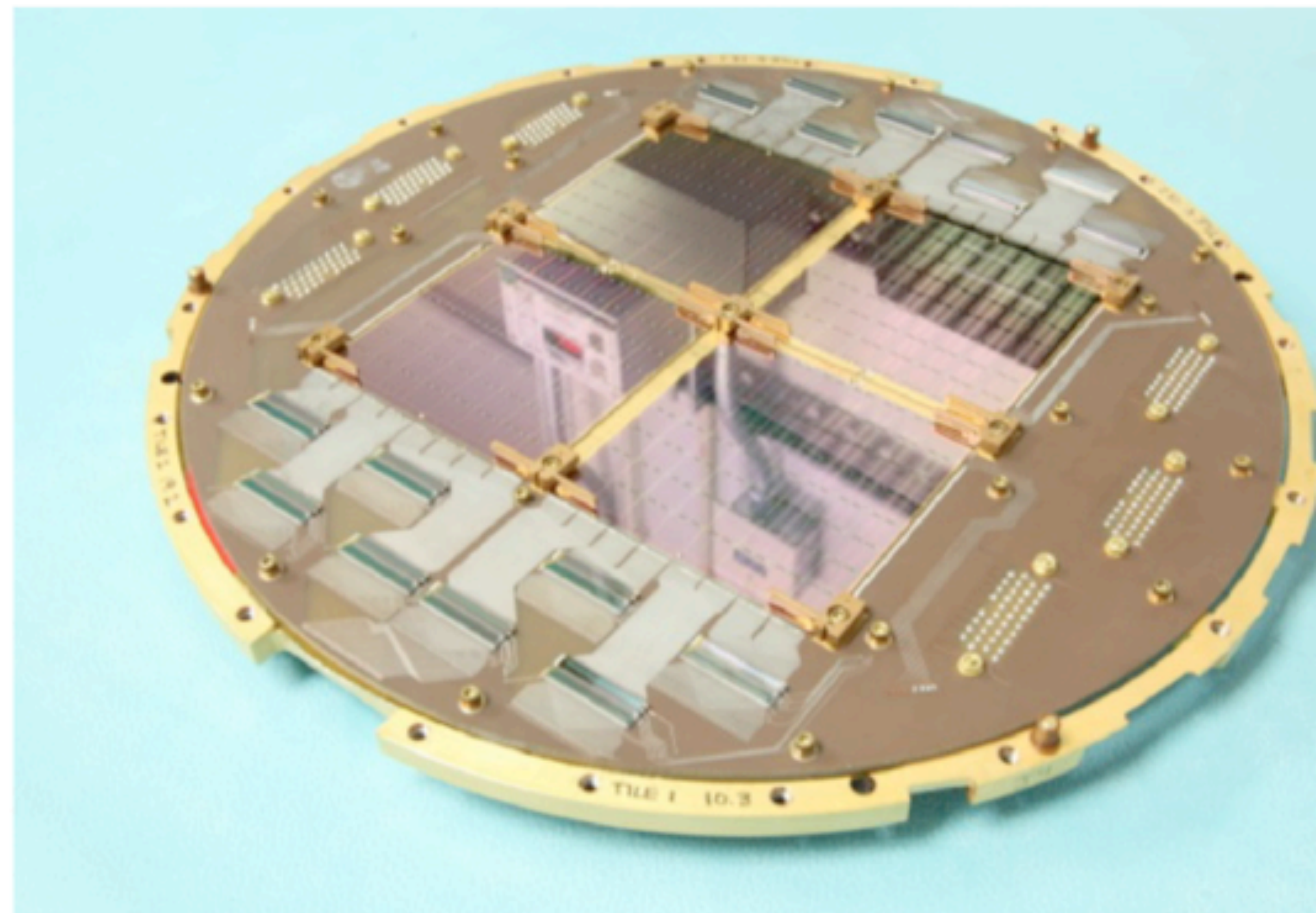
http://bicepkeck.org

Esta parte esta a 350 mK



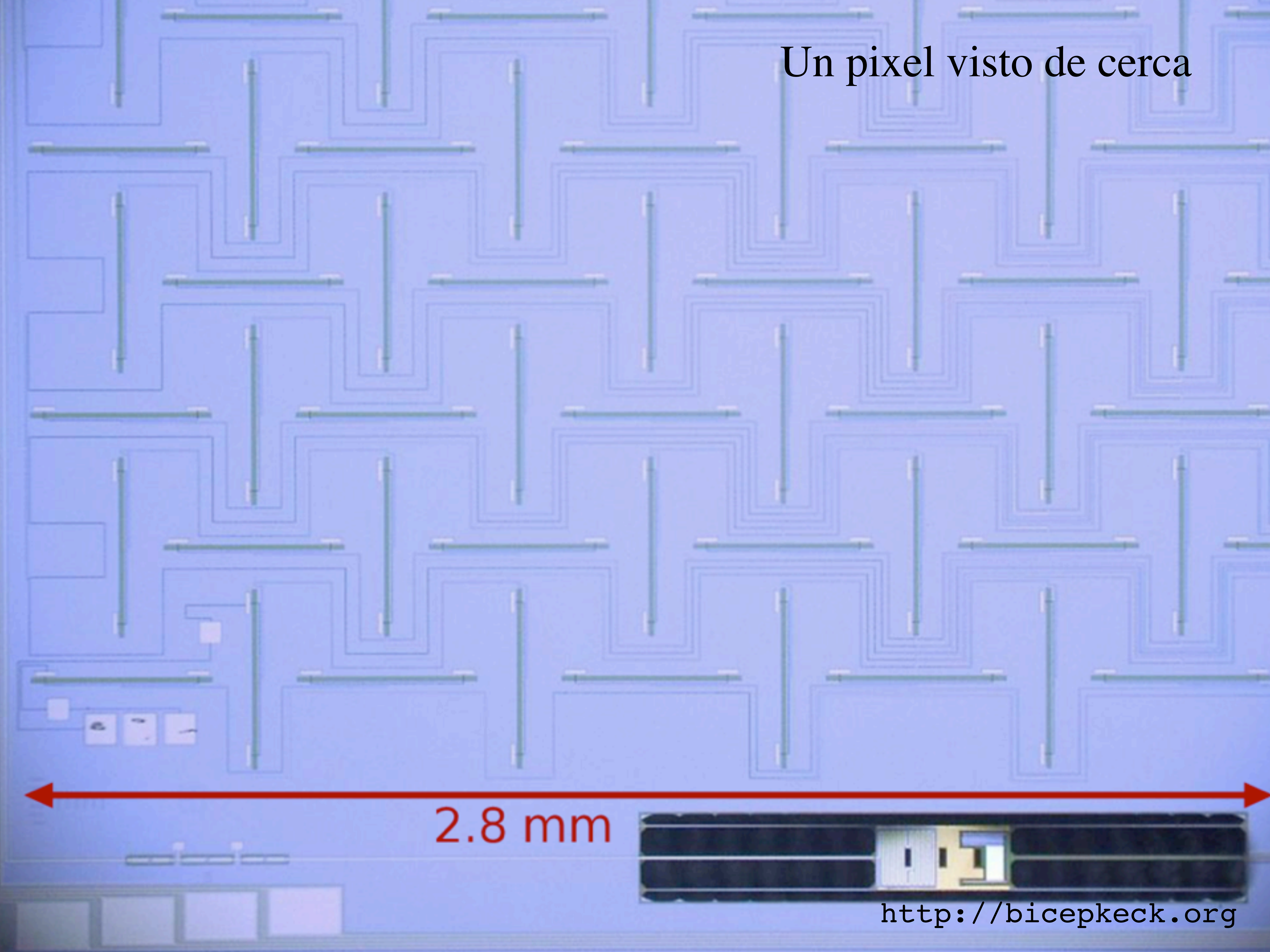
http://bicepkeck.org

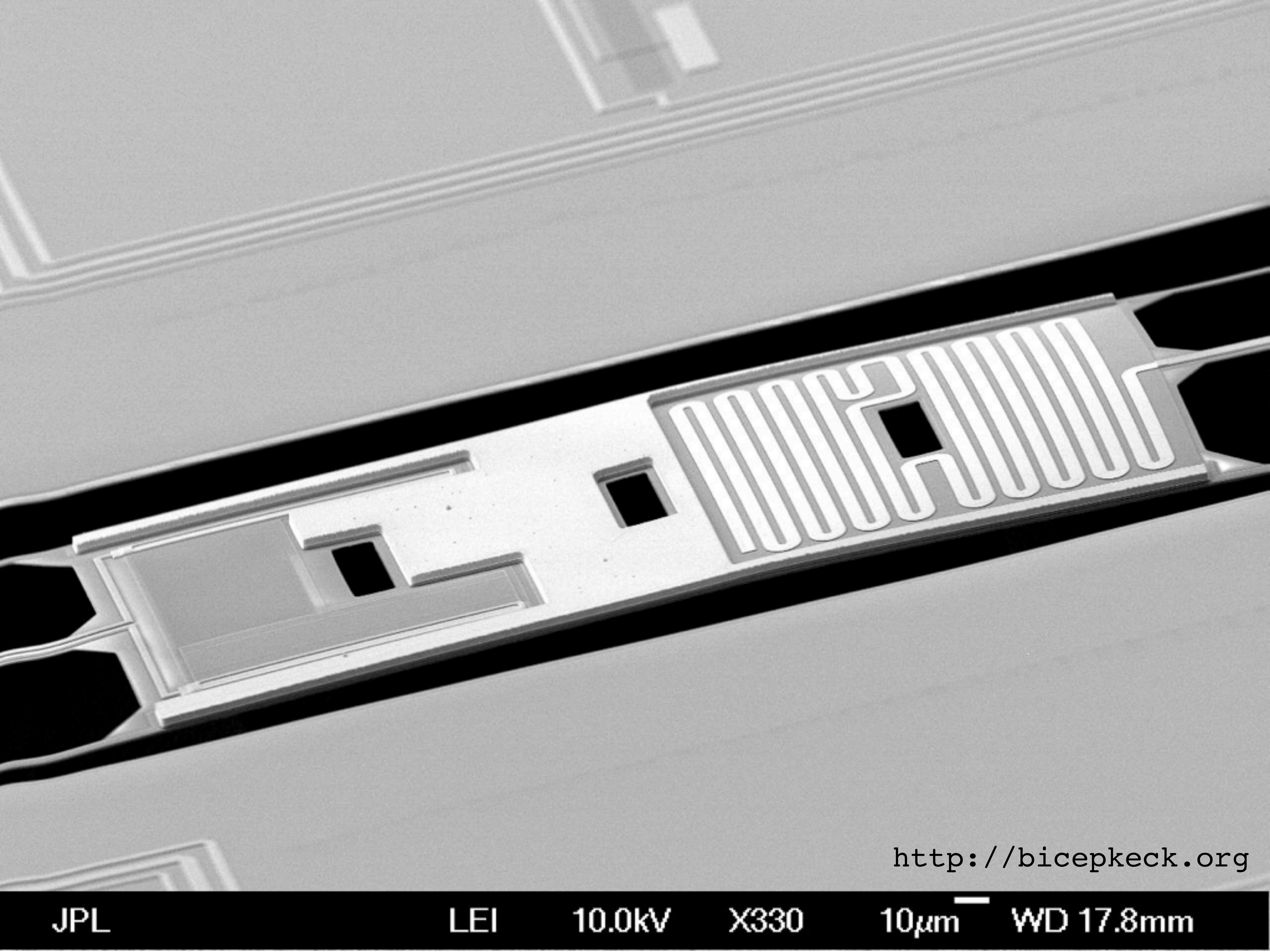


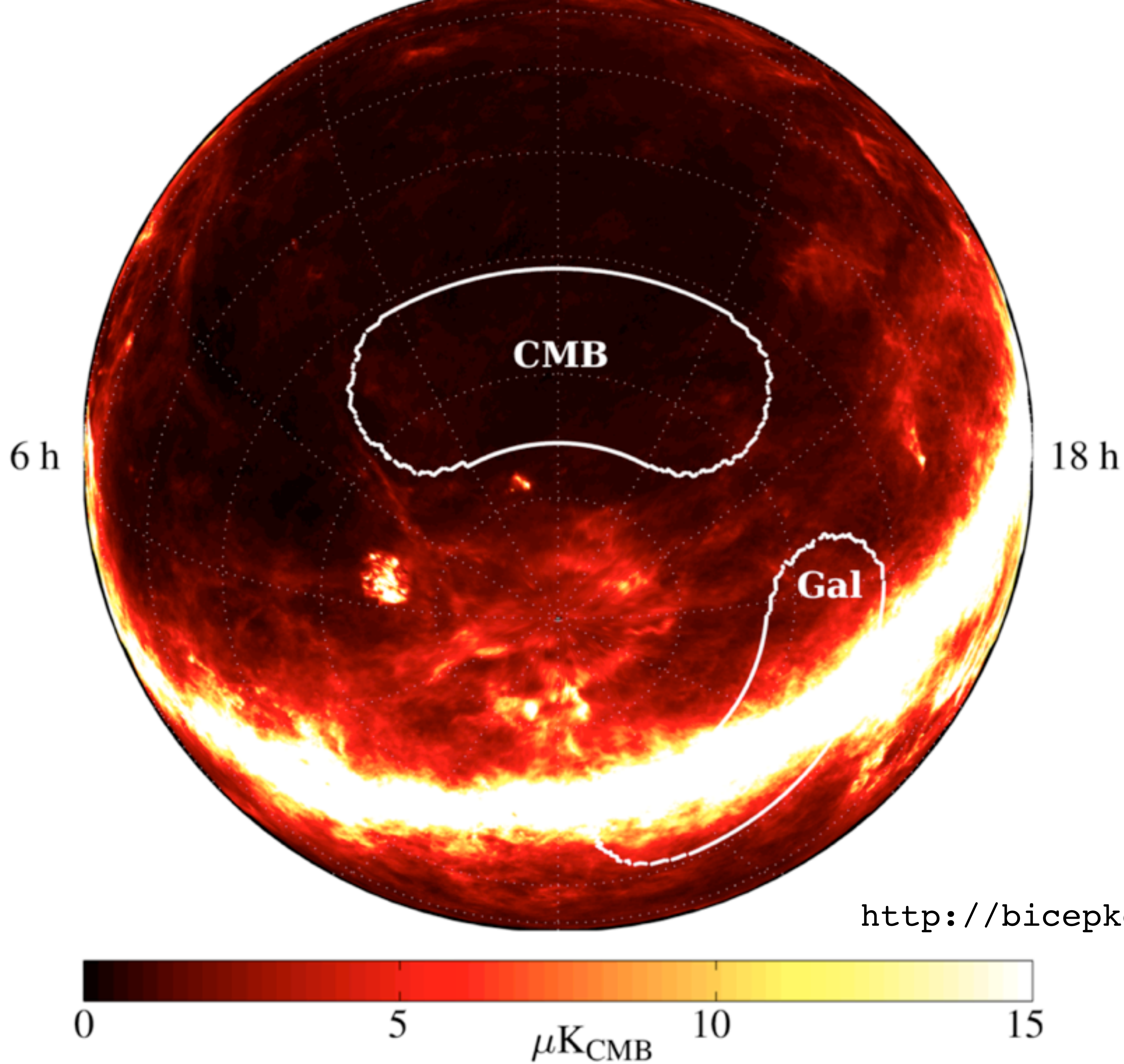


http://bicepkeck.org

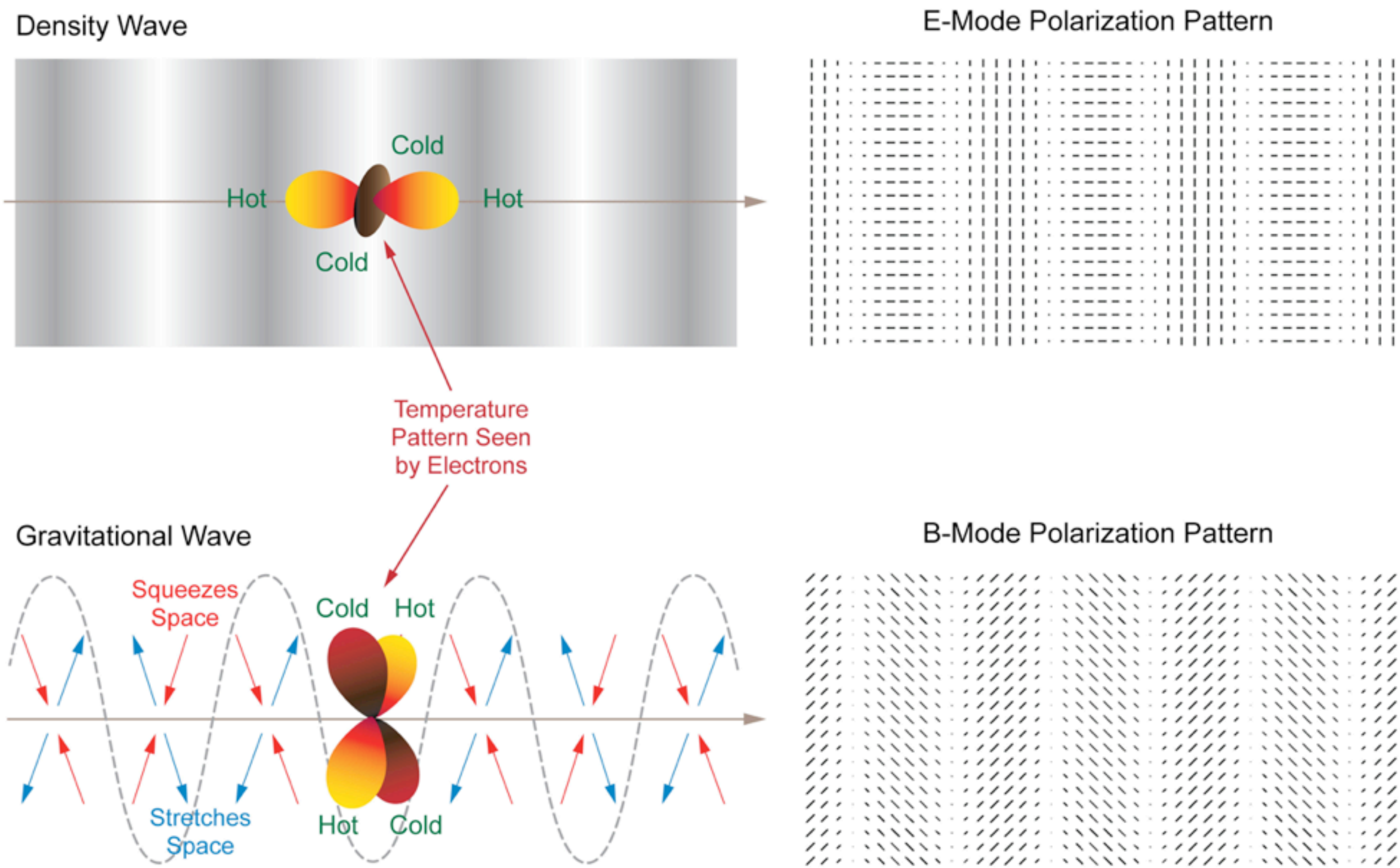
Un pixel visto de cerca



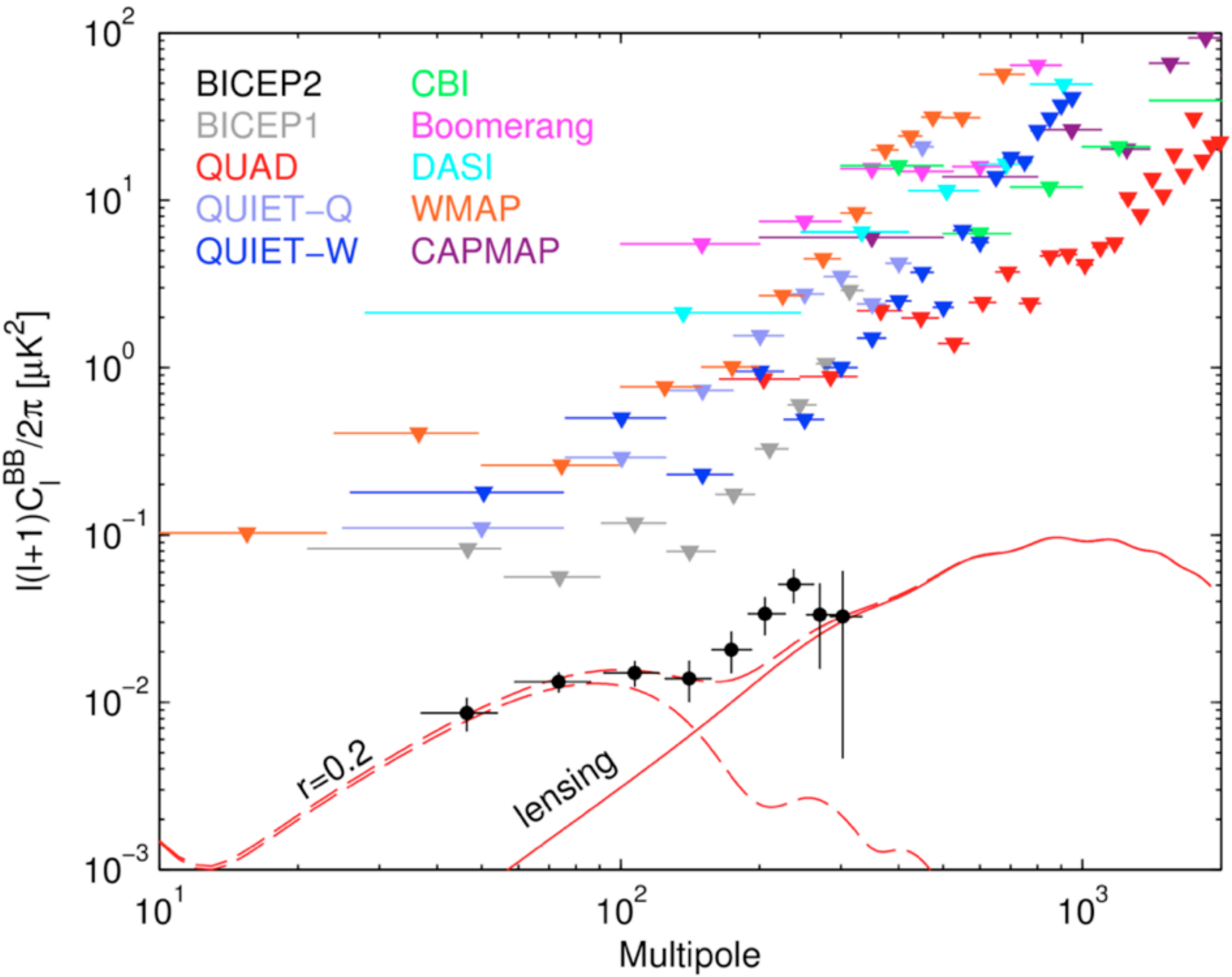

http://bicepkeck.org
JPL
LEI
10.0kV
X330
10μm
WD 17.8mm



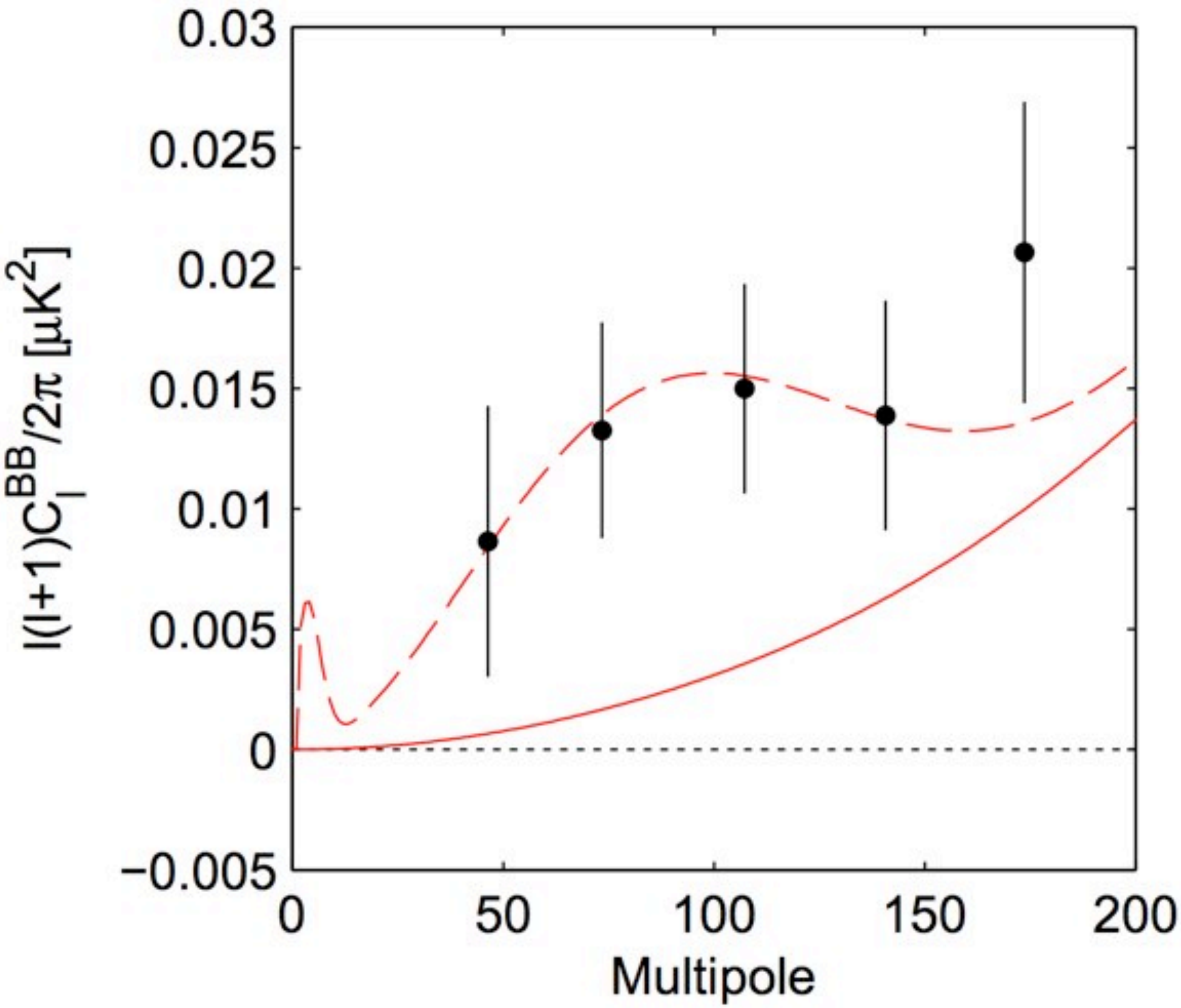
http://bicepkeck.org



Density Wave
Cold
Hot
Hot
Cold
E-Mode Polarization Pattern
Temperature
Pattern Seen
by Electrons
Gravitational Wave
B-Mode Polarization Pattern
Squeezes
Space
Cold
Hot
Stretches
Space
Hot
Cold

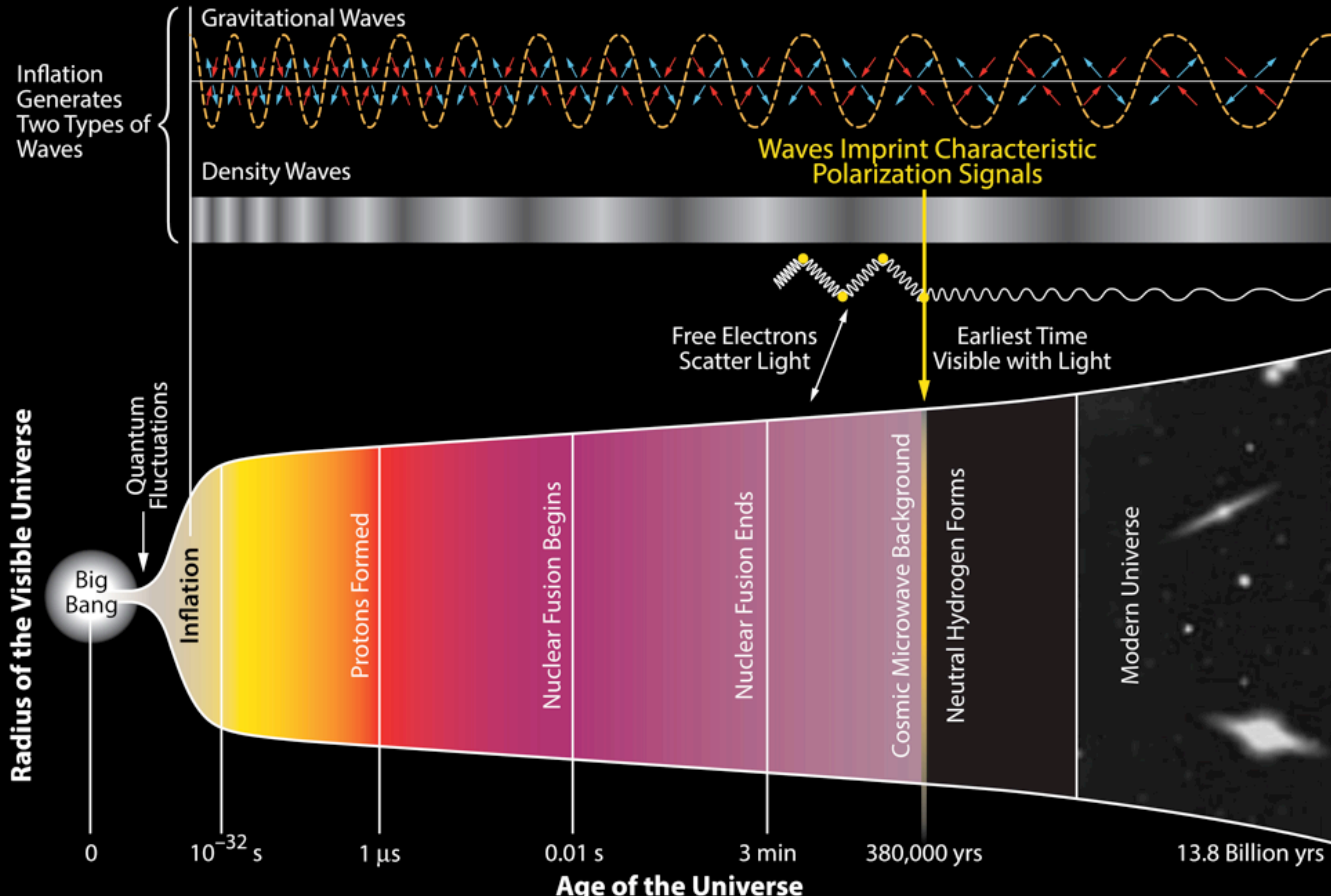


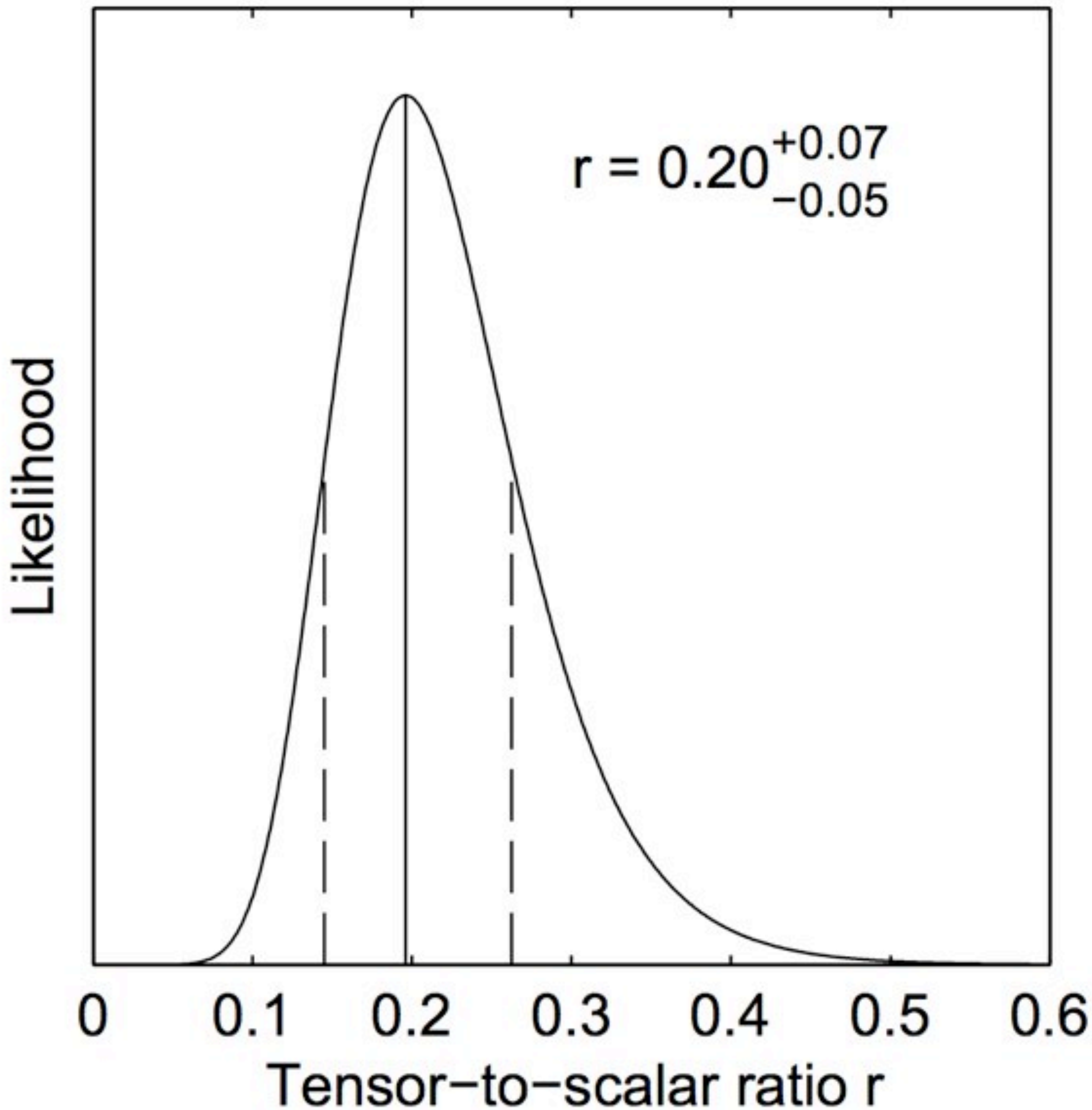
BICEP2
BICEP1
QUAD
QUIET−Q
QUIET−W
CBI
Boomerang
DASI
WMAP
CAPMAP
r=0.2
lensing
10^{2}
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
$l(l+1)C_l^{BB}/2\pi\ [\mu K^2]$
10^{1}
10^{2}
10^{3}
Multipole



0.03
0.025
0.02
0.015
0.01
0.005
0
−0.005
0
50
100
150
200
Multipole
l(l+1)C_l^BB/2π [μK^2]

History of the Universe





$r = 0.20^{+0.07}_{-0.05}$
Likelihood
0
0.1
0.2
0.3
0.4
0.5
0.6
Tensor−to−scalar ratio r

PHYSICAL REVIEW D VOLUME 23, NUMBER 2 15 JANUARY 1981

Inflationary universe: A possible solution to the horizon and flatness problems

Alan H. Guth*

Stanford Linear Accelerator Center, Stanford University, Stanford, California 94305

(Received 11 August 1980)

The standard model of hot big-bang cosmology requires initial conditions which are problematic in two ways: (1) The early universe is assumed to be highly homogeneous, in spite of the fact that separated regions were causally disconnected (horizon problem); and (2) the initial value of the Hubble constant must be fine tuned to extraordinary accuracy to produce a universe as flat (i.e., near critical mass density) as the one we see today (flatness problem). These problems would disappear if, in its early history, the universe supercooled to temperatures 28 or more orders of magnitude below the critical temperature for some phase transition. A huge expansion factor would then result from a period of exponential growth, and the entropy of the universe would be multiplied by a huge factor when the latent heat is released. Such a scenario is completely natural in the context of grand unified models of elementary-particle interactions. In such models, the supercooling is also relevant to the problem of monopole suppression. Unfortunately, the scenario seems to lead to some unacceptable consequences, so modifications must be sought.

I. INTRODUCTION: THE HORIZON AND FLATNESS PROBLEMS

The standard model of hot big-bang cosmology relies on the assumption of initial conditions which are very puzzling in two ways which I will explain below. The purpose of this paper is to suggest a modified scenario which avoids both of these puzzles.

completely described.

Now I can explain the puzzles. The first is the well-known horizon problem.[2-4] The initial universe is assumed to be homogeneous, yet it consists of at least $\sim 10^{83}$ separate regions which are causally disconnected (i.e., these regions have not yet had time to communicate with each other via light signals).[5] (The precise assumptions


Rick Friedman - The New York Times

INFLATION FOR ASTRONOMERS

J.V. Narlikar

Inter-University Centre for Astronomy and Astrophysics, Post Bag 4,
Ganeshkhind, Pune 411 007, India

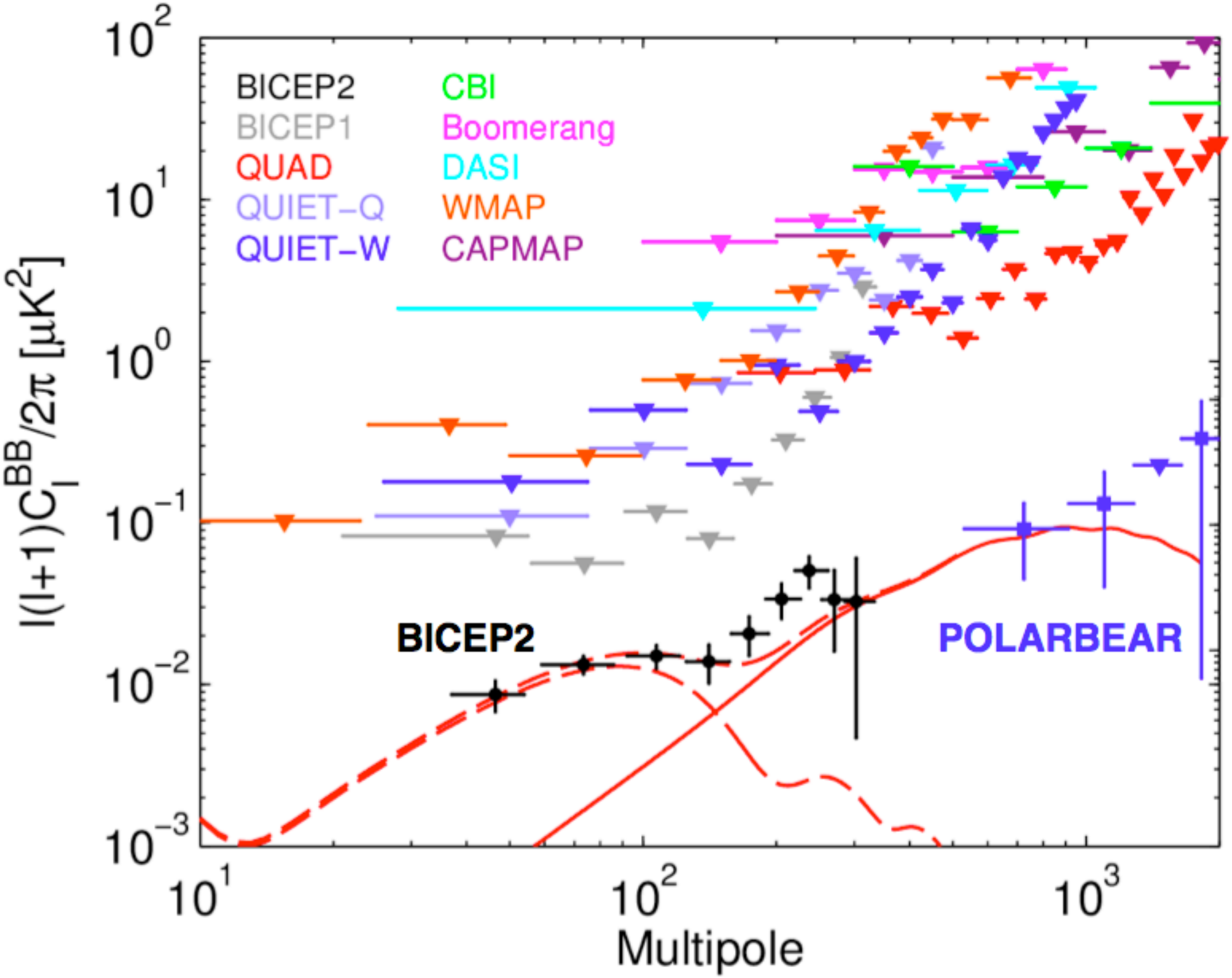
T. Padmanabhan

Tata Institute of Fundamental Research, Homi Bhabha Road,
Bombay 400 005, India

What would we learn by detecting a gravitational wave signal in the cosmic microwave background anisotropy?

David H. Lyth
School of Physics and Chemistry, Lancaster University, Lancaster LA1 4YB, U. K.
(June 1996)

Inflation generates gravitational waves, which may be observable in the low multipoles of the cosmic microwave background (cmb) anisotropy but only if the inflaton field variation is at least of order the Planck scale. Such a large variation would imply that the model of inflation cannot be part of an ordinary extension of the standard model, and combined with the detection of the waves it would also suggest that the inflaton field cannot be one of the superstring moduli. Another implication of observable gravitational waves would be a potential $V^{1/4} = 2$ to 4×10^{16} GeV, which is orders of magnitude bigger than is expected on the basis of particle theory. It might emerge in a hybrid inflation model where most of the energy density comes from the Higgs sector of a GUT, but only if both the vacuum expectation values *and the masses* of the Higgs fields are of this order.



http://telescoper.wordpress.com/2014/03/19/time-for-a-cosmological-reality-check/

III Particle Physics School - Dark Matter

19-23 May 2014 *Physics Department, Universidad de los Andes*

America/Bogota timezone

El Grupo de Altas Energías de la Universidad de los Andes, Colombia, esta organizando la Tercera Escuela Uniandina de Física de Partículas en el campus de la universidad, en Bogotá, entre los días 19 y 23 de Mayo de 2014. El tema de la escuela será Materia Oscura. Contaremos con conferencistas de CERN, LAPP-Annecy, Universidad de Boloña, Universidad Texas A&M, Universidad de Vanderbilt, Universidad de Antioquia y Universidad de los Andes, que presentarán charlas sobre teoría, fenomenología y búsquedas experimentales de Materia Oscura; también se harán talleres computacionales. Se contará con ayuda financiera para un numero limitado de estudiantes de fuera de Bogotá.

Fechas Importantes:

- Inscripciones: Marzo 21 a Abril 25
- Publicación de la lista de estudiantes aceptados: Abril 30
- Fecha limite para envío de resúmenes de posters: Mayo 10

https://fisindico.uniandes.edu.co/indico/conferenceDisplay.py?ovw=True&confId=64