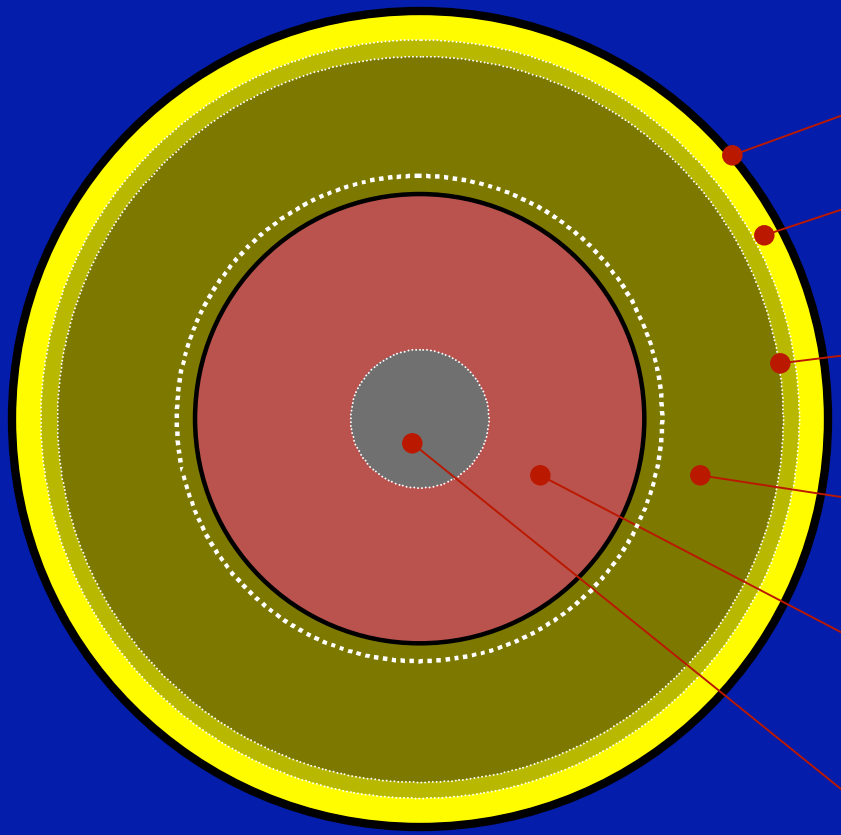
12.570 - Structure and dynamics of the CMB region

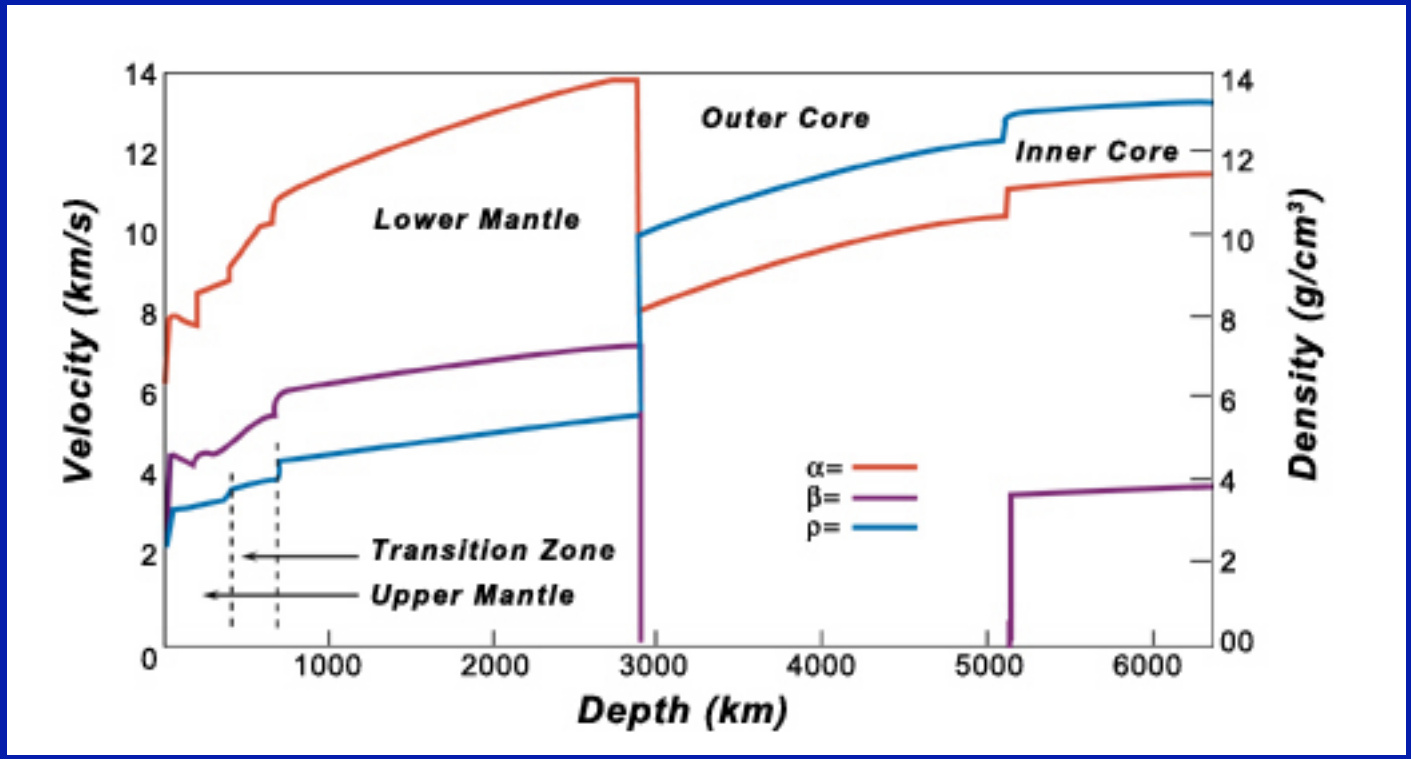


1st order Earth structure

- crust: 10's km (A)
- upper mantle: 25-410km (B)
- transition zone: 410-660km (C)
- lower mantle: 660-2891km (D' and D'')
- outer core: 2891-5149.5km (E)
- inner core: 5149.5-6371km (F)

Preliminary Reference Earth Model - PREM

Dziewonski & Anderson, *Phys. Earth Planet. Inter.*, *25*, 297-351, 1981.

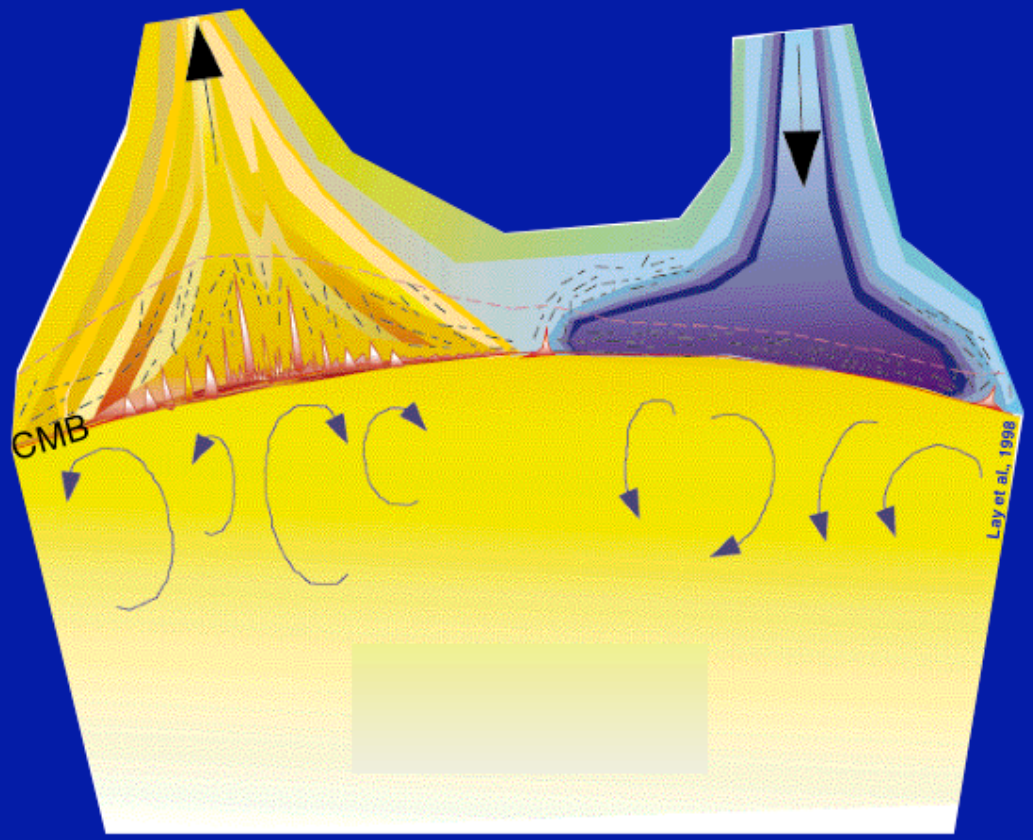


CMB

□=13.71 km/s
□= 7.26 km/s

□= 8.06 km/s
□= 0.00 km/s

The Core Mantle Boundary region

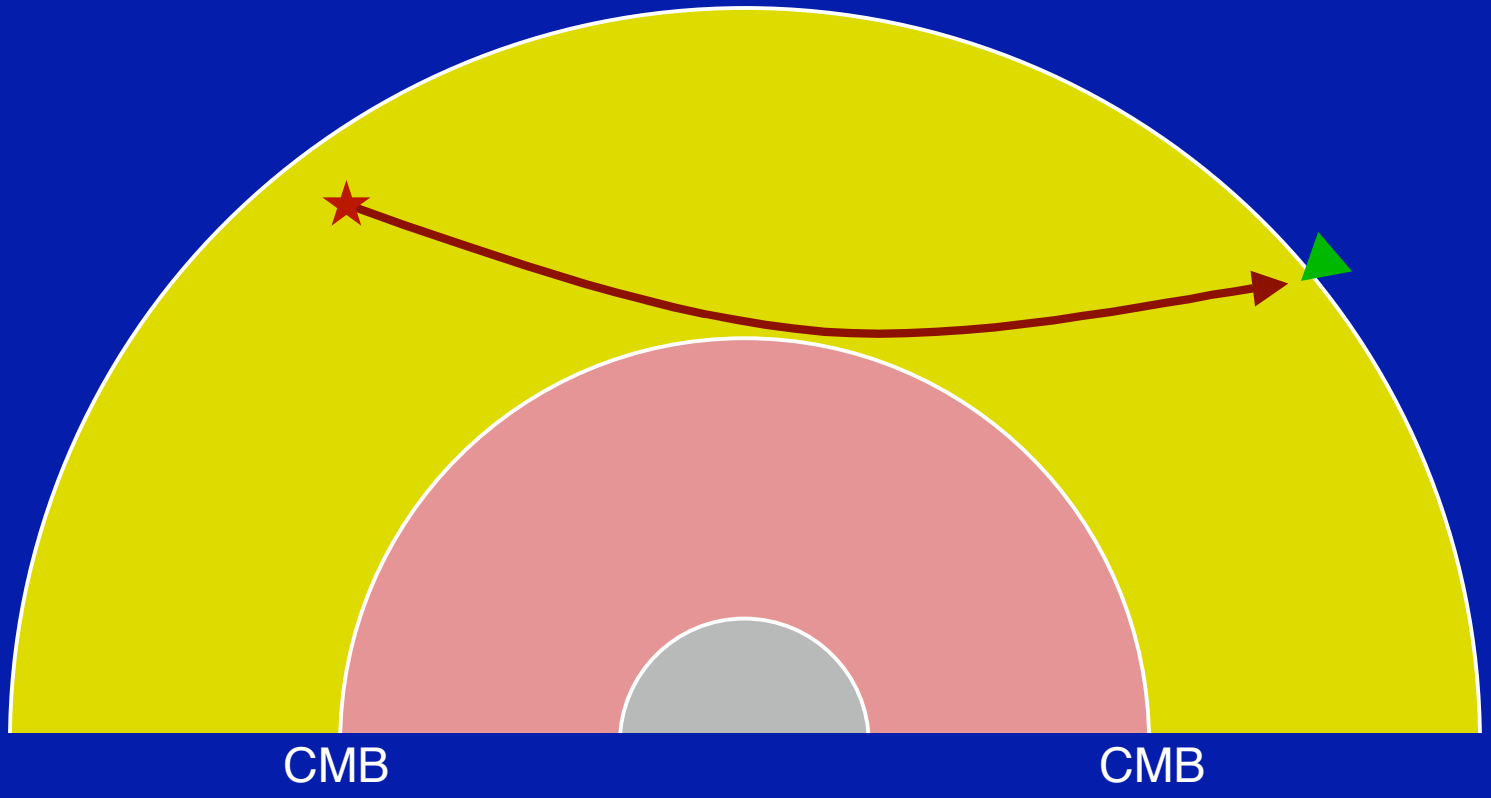


Lay et al., *Nature*, *392*, 461-468, 1998.

seismic probing of the CMB

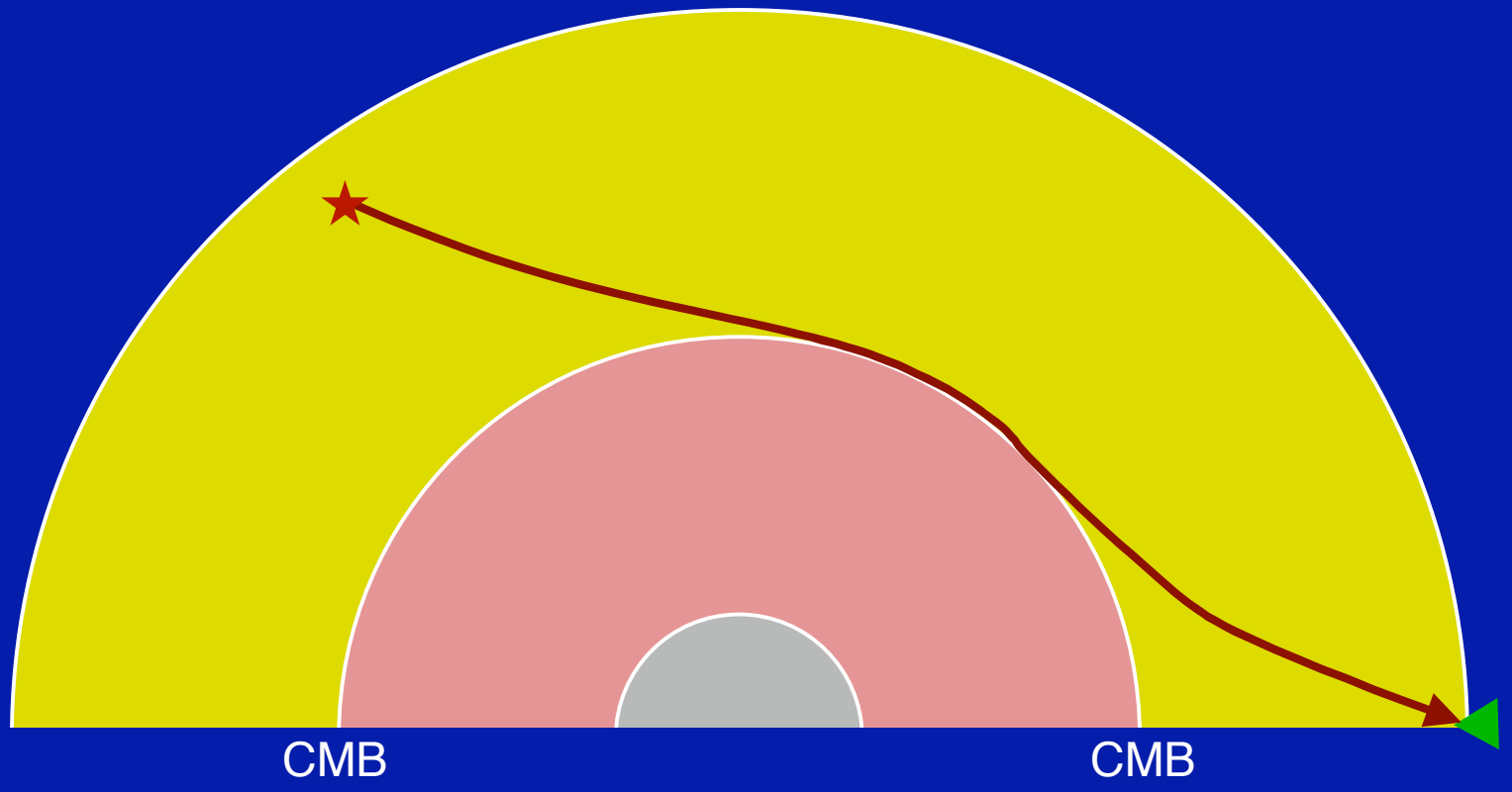
normal modes

P and S waves



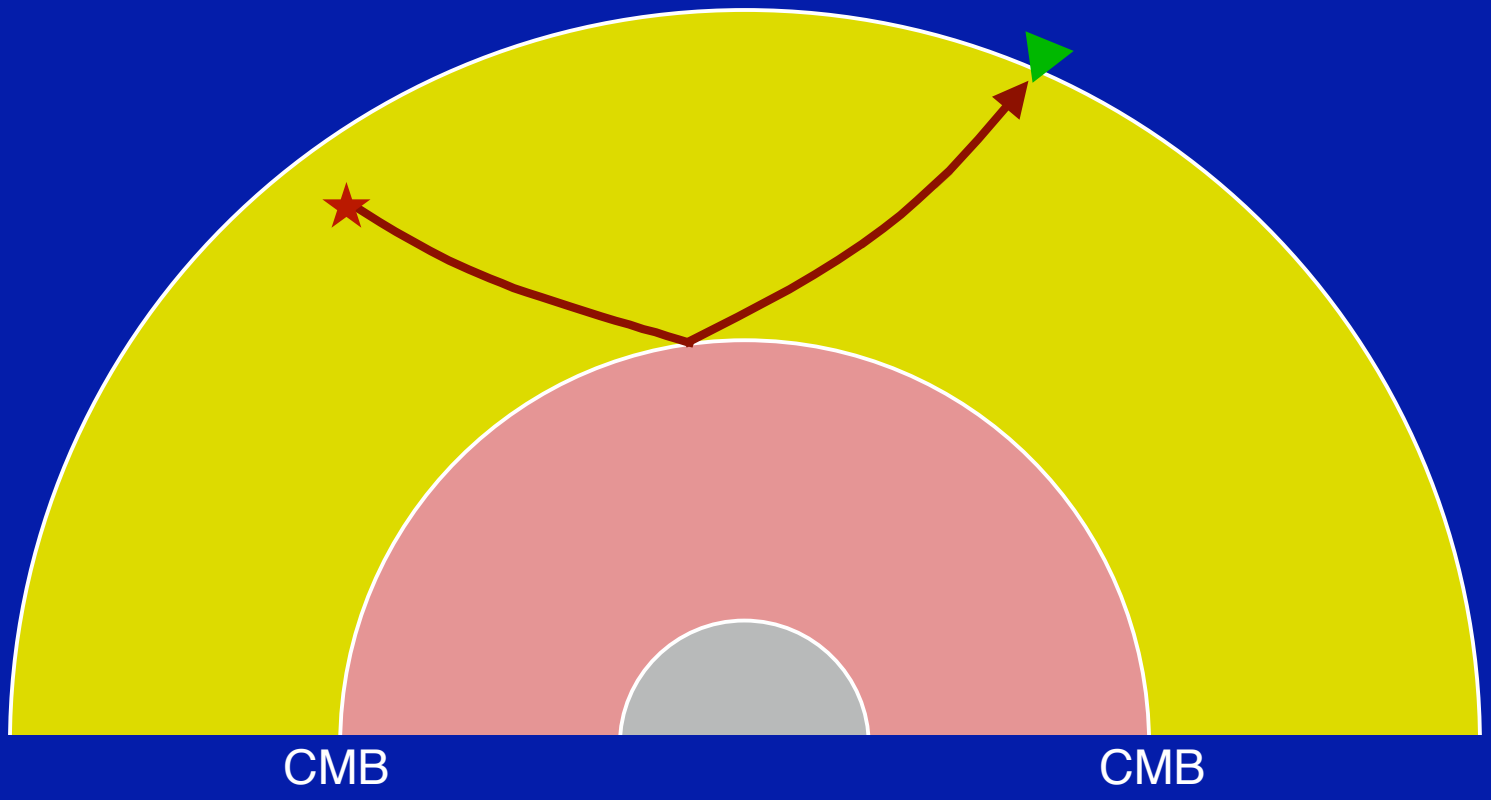
seismic probing of the CMB

Pdif and Sdif waves



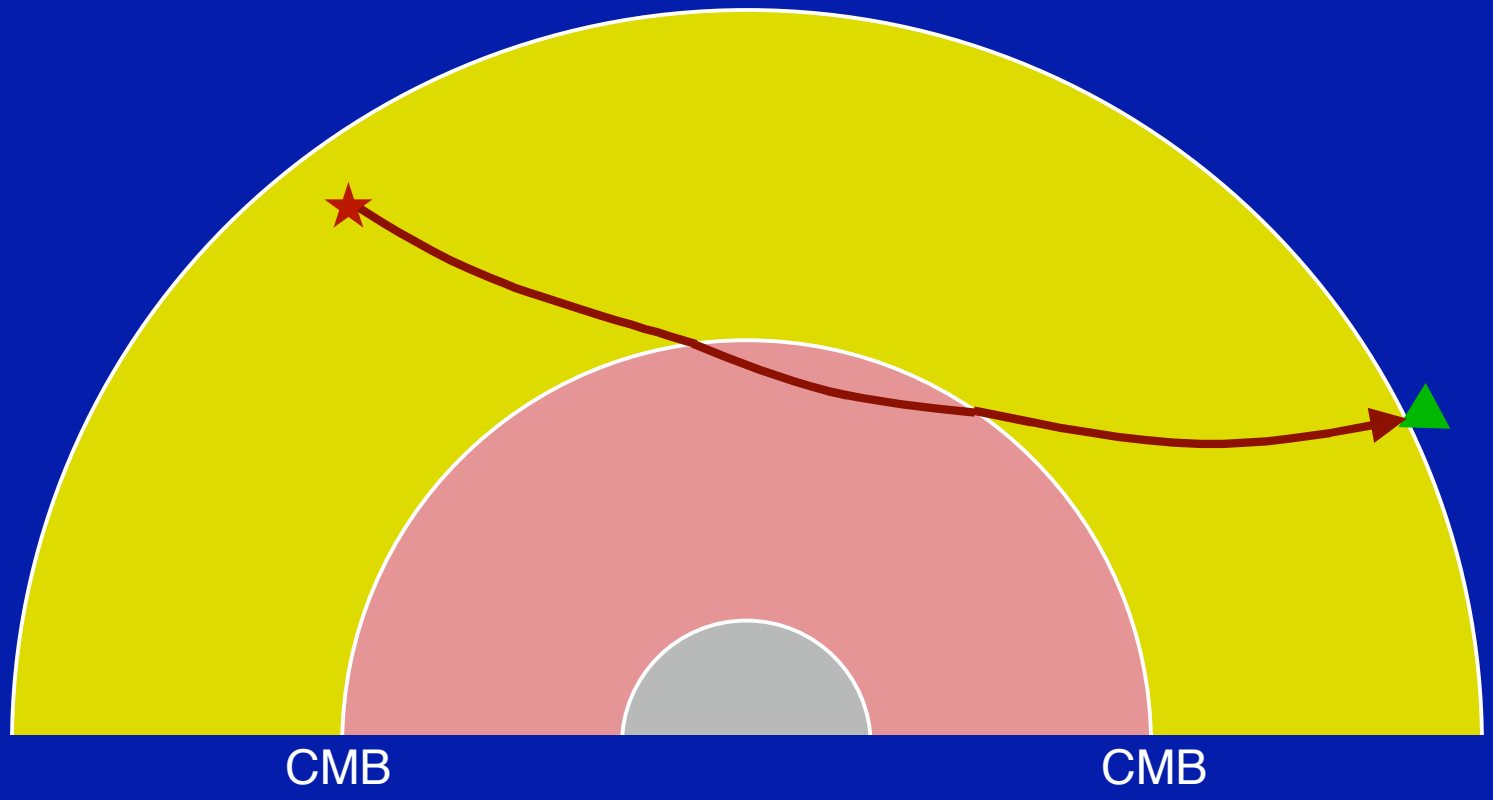
seismic probing of the CMB

PcP, ScS and ScP waves



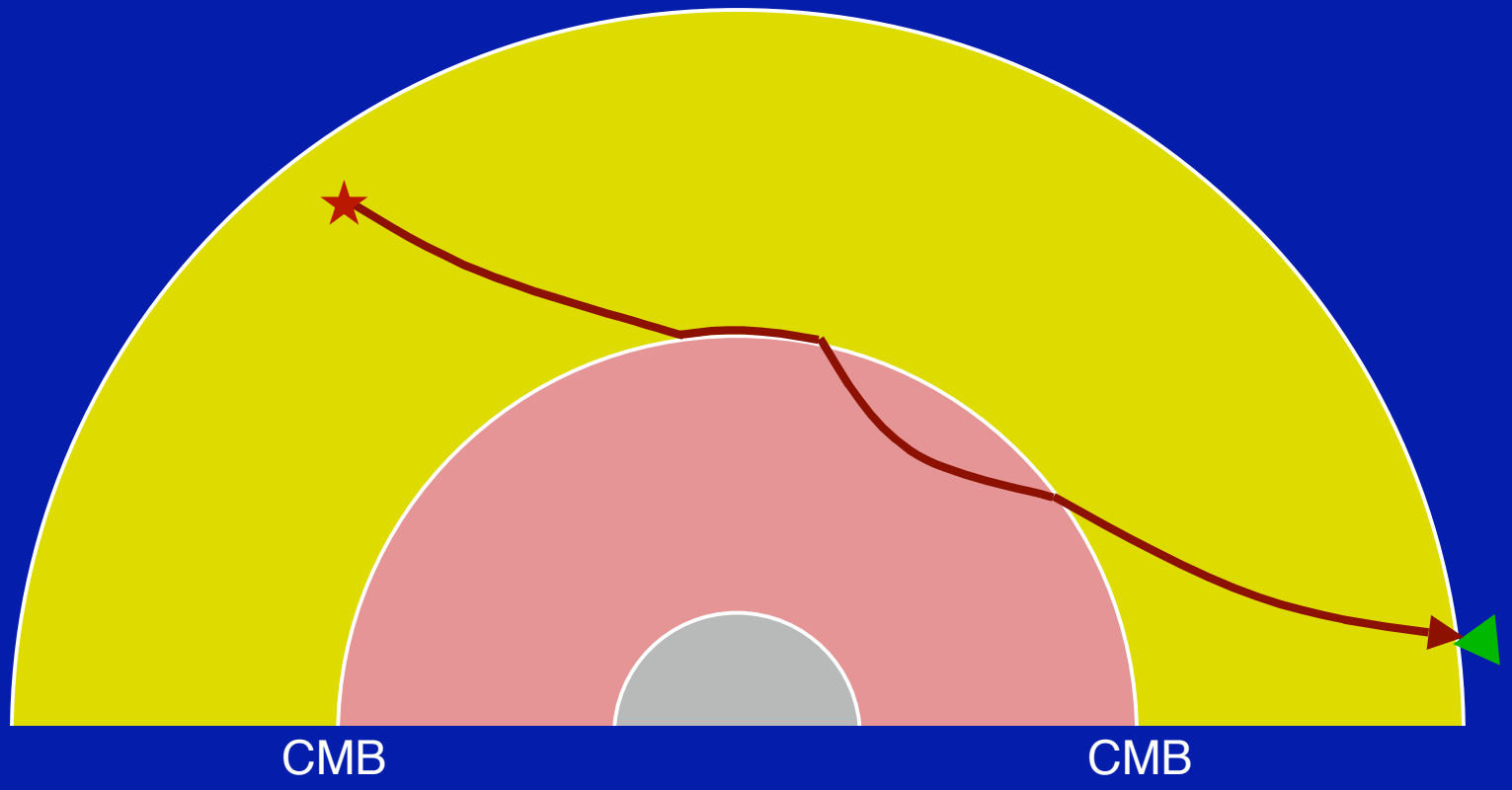
seismic probing of the CMB

PKP, SKS waves

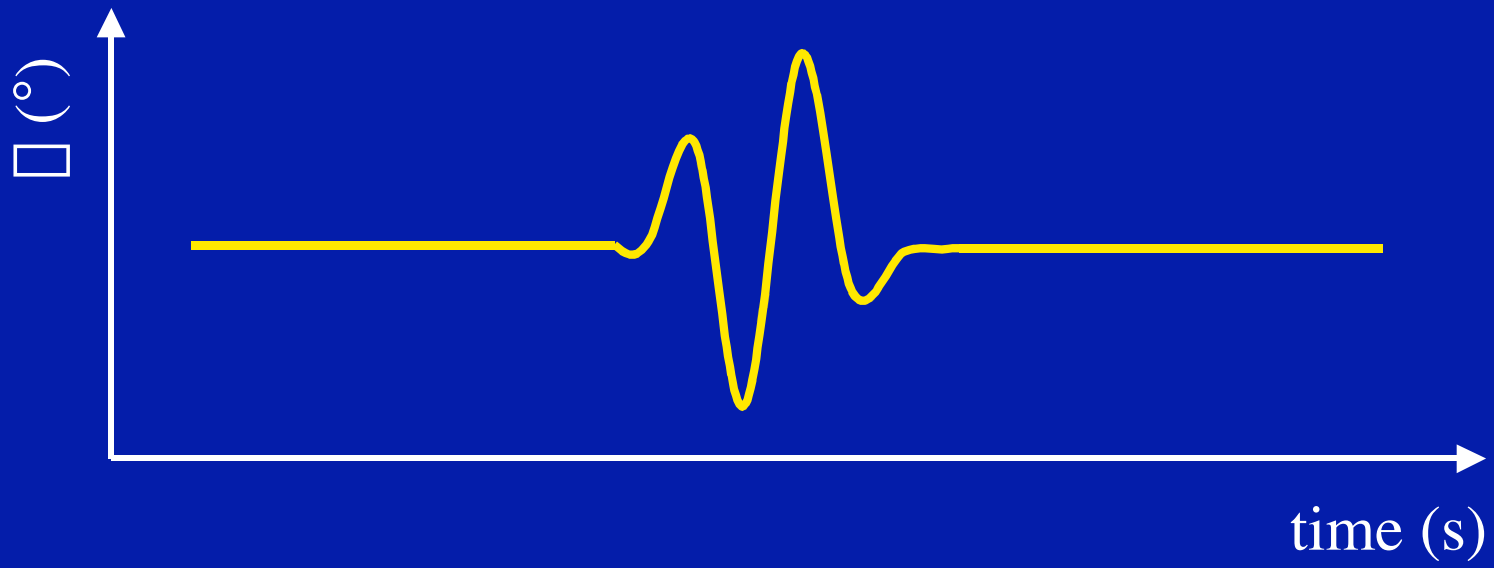


seismic probing of the CMB

SPdKS waves



seismic probing of the CMB



Phase parameters:

- relative arrival time
- relative amplitude
- waveform distortion, including precursors and postcursors

CMB parameters:

- seismic velocities
- attenuation
- seismic discontinuities (mapping and modeling)
- anisotropy