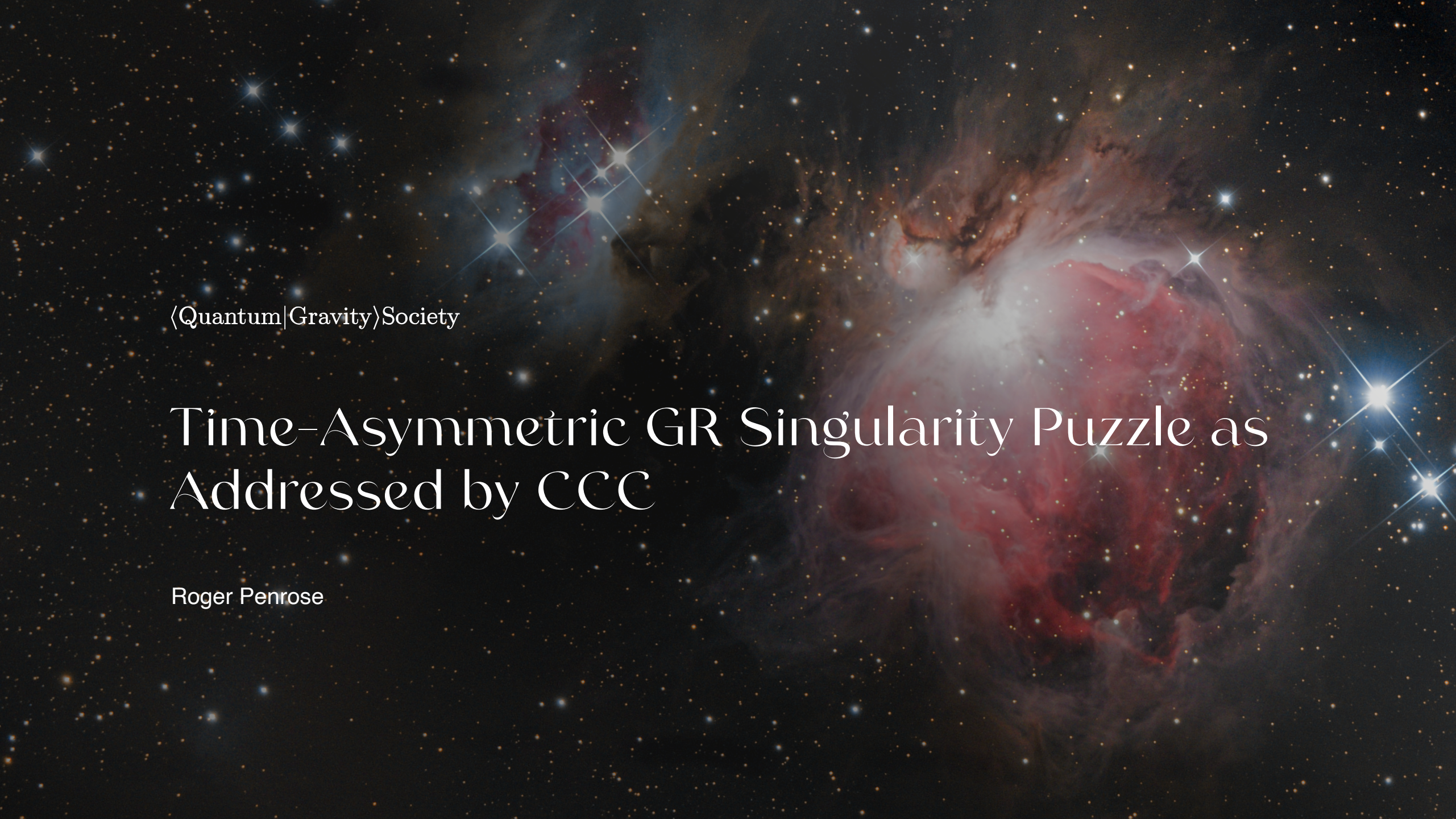


⟨Quantum|Gravity⟩Society

Time-Asymmetric GR Singularity Puzzle as Addressed by CCC

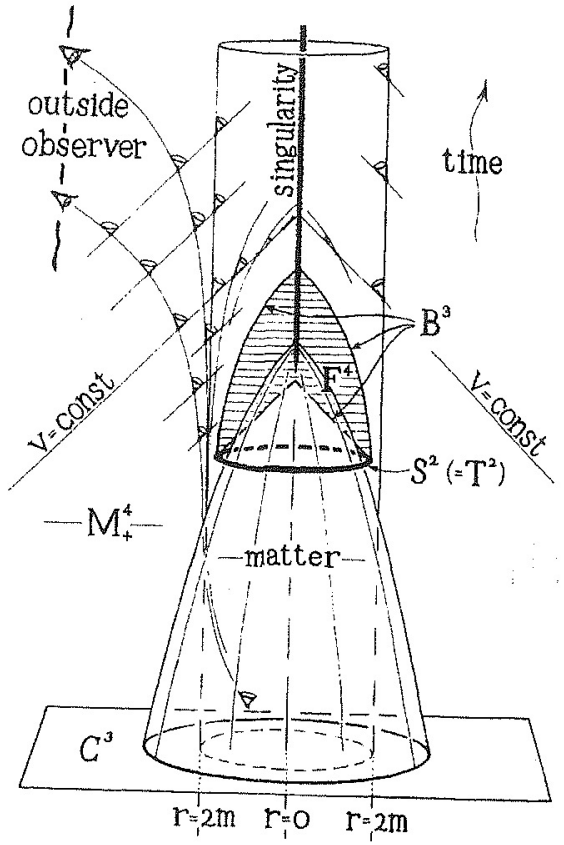
Roger Penrose

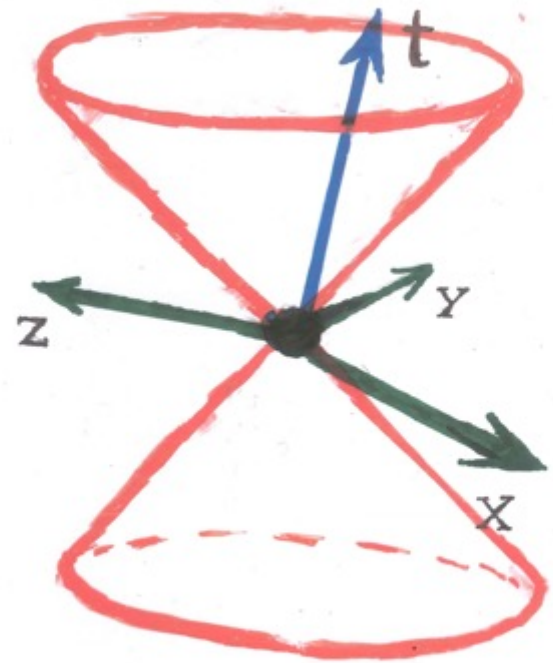
.

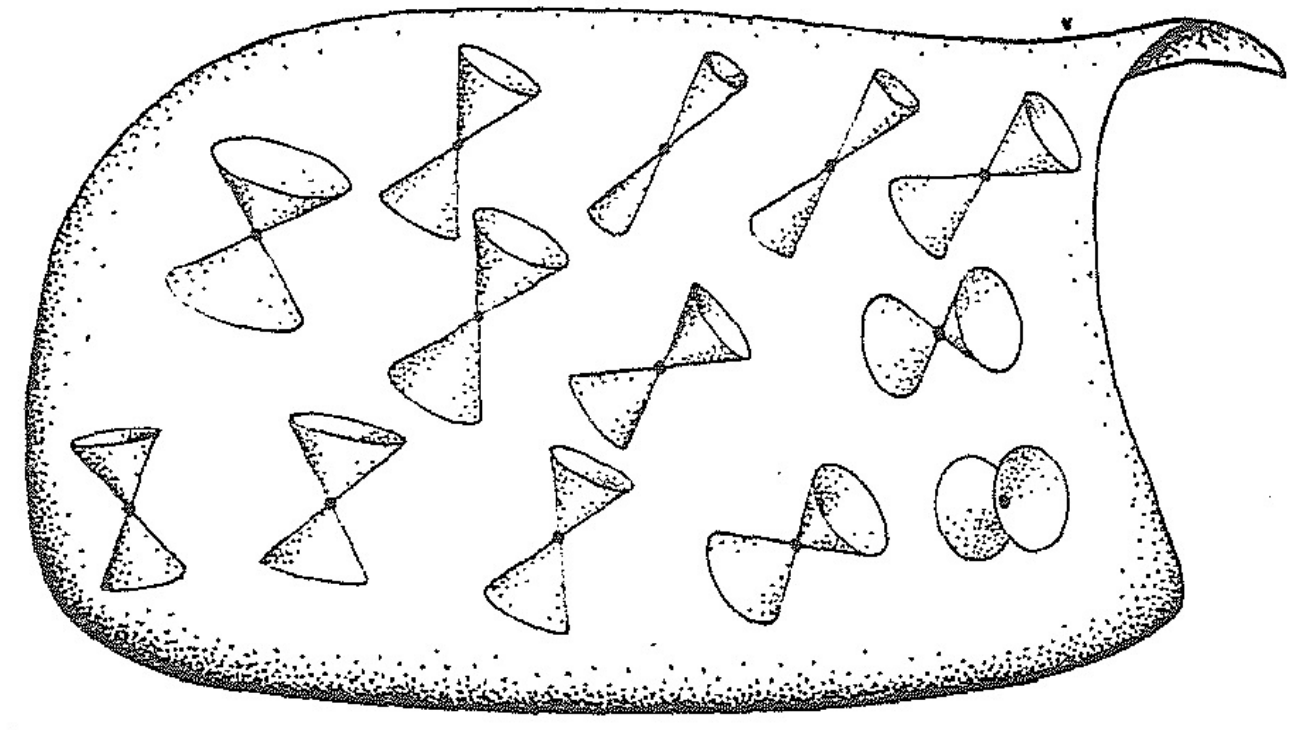
Time-asymmetric GR singularity Puzzle as Addressed by CCC

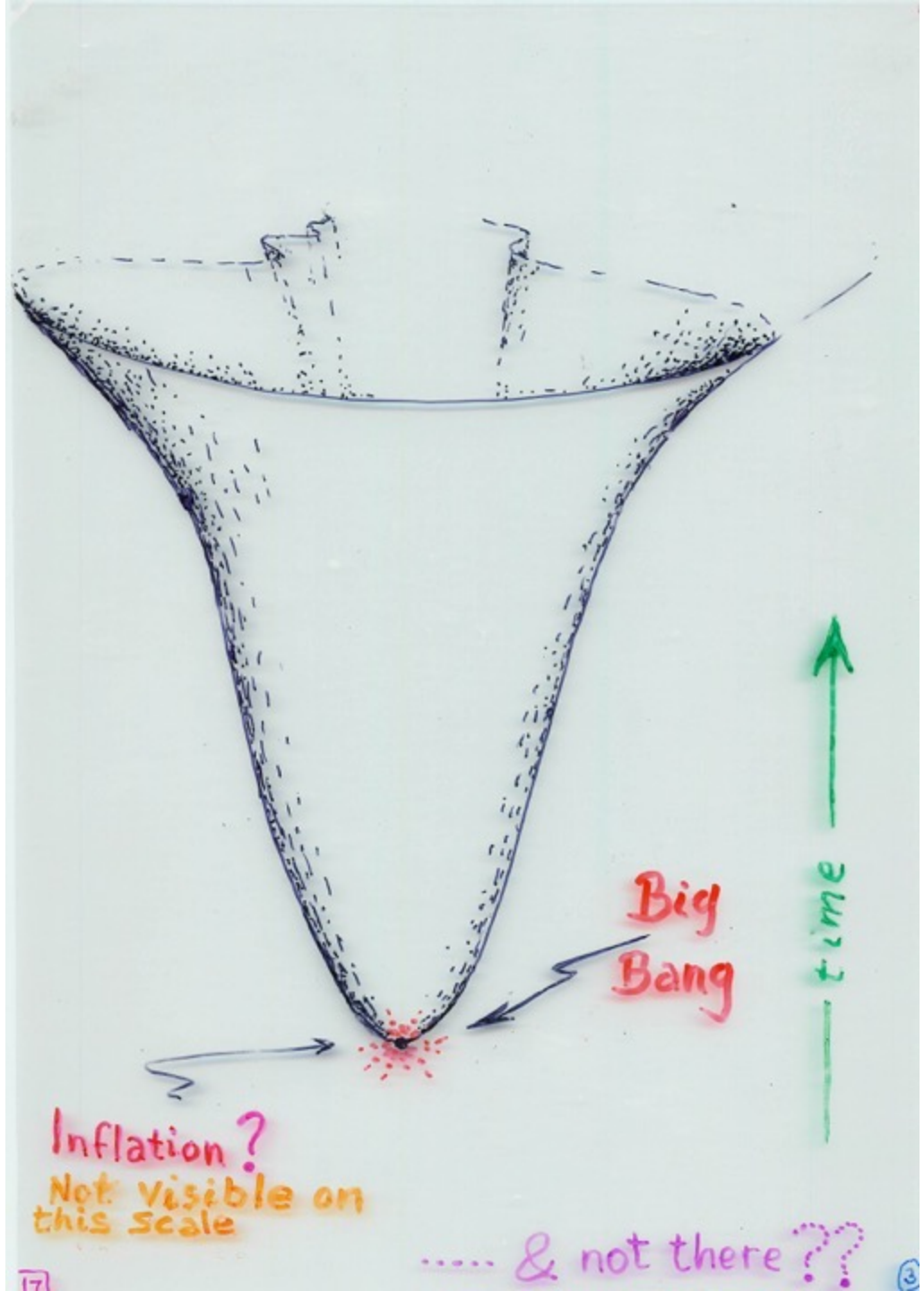
Roger Penrose

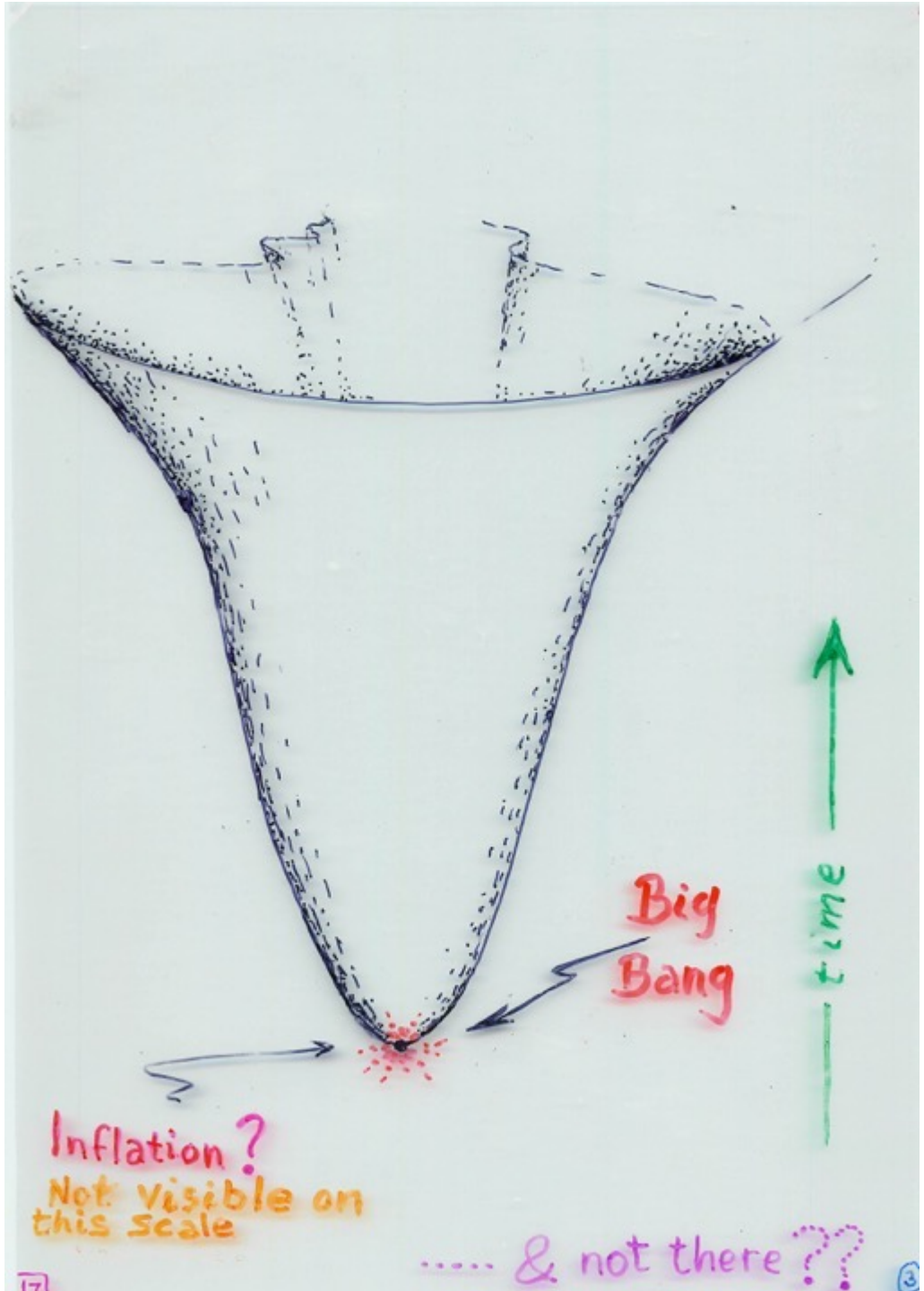
University of Oxford


outside
observer
singularity
time
B³
F⁴
v=const
v=const
S² (=T²)
M⁴₊
matter
C³
r=2m
r=0
r=2m


t
z
y
x




Big
Bang
time
Inflation?
Not visible on
this scale
..... & not there??


Big
Bang
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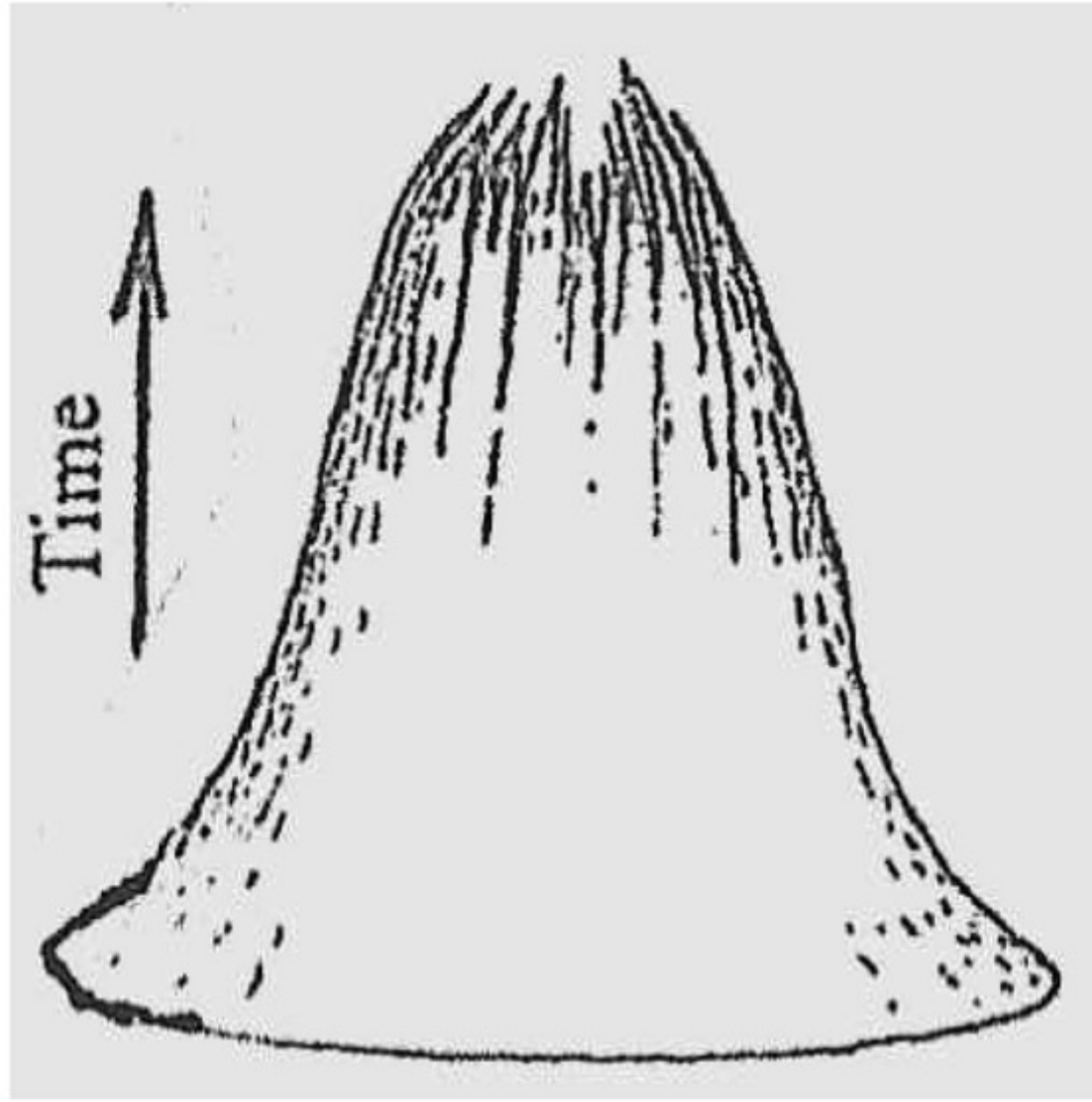
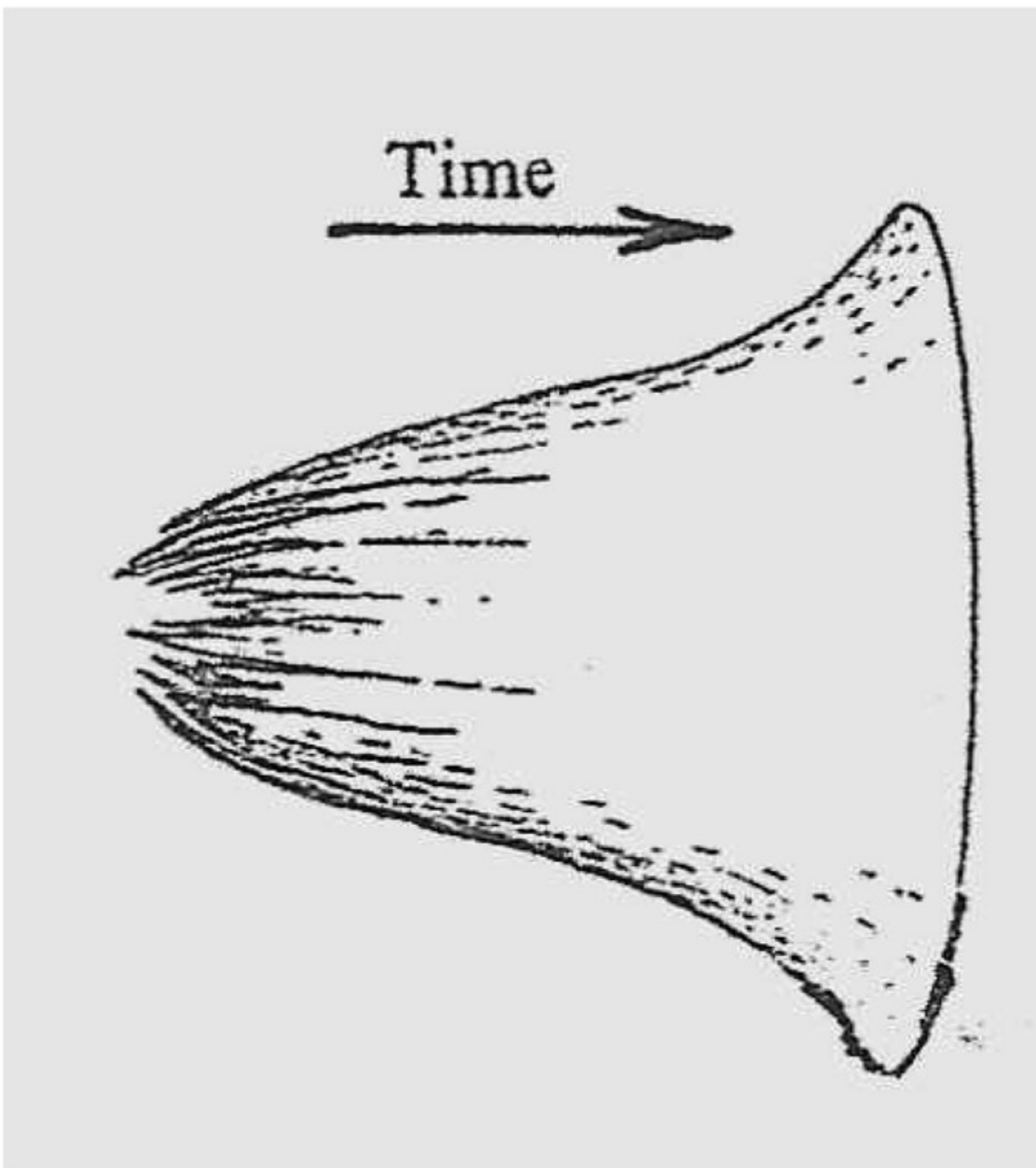
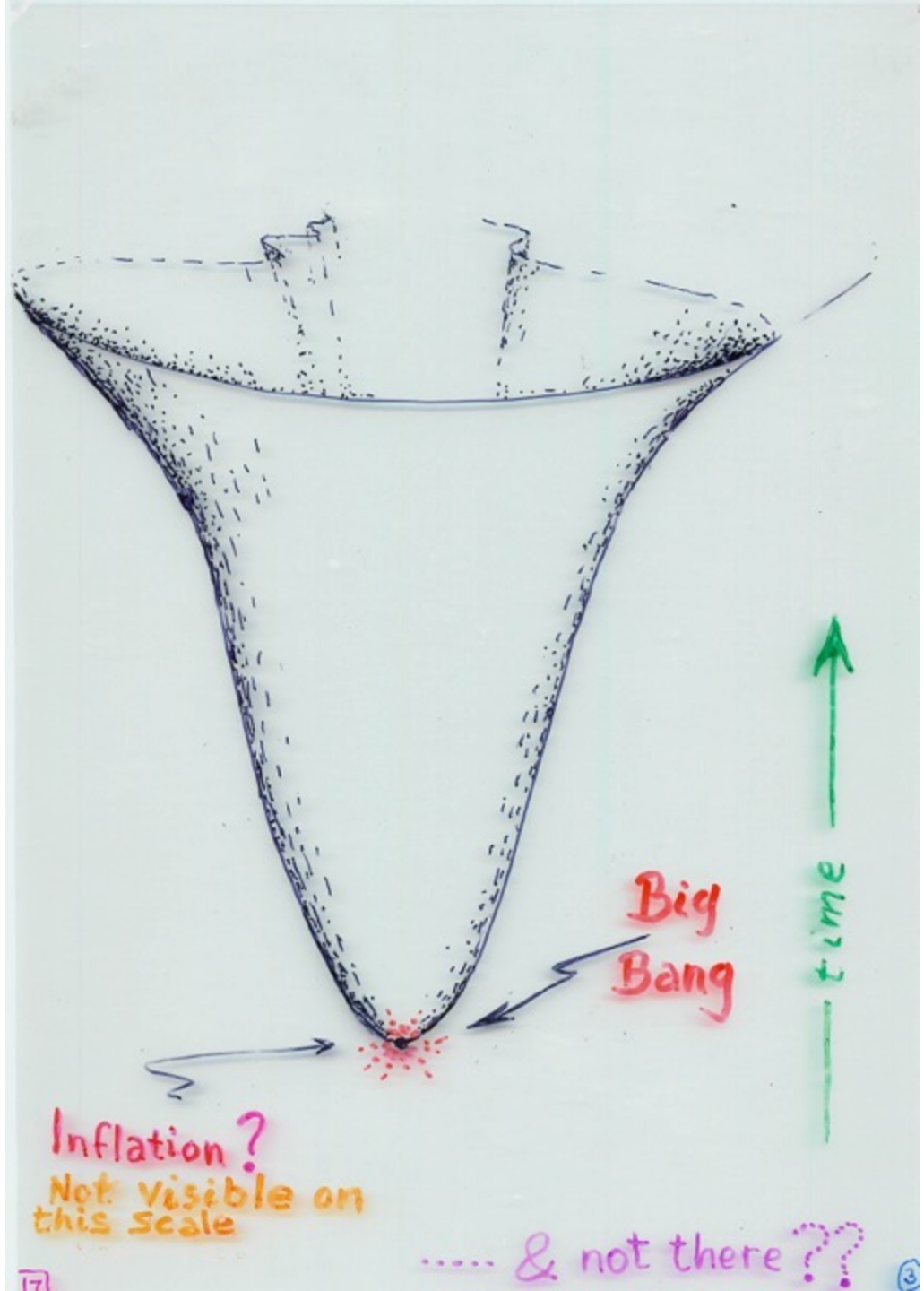
..... & not there??


Time


Time


Big
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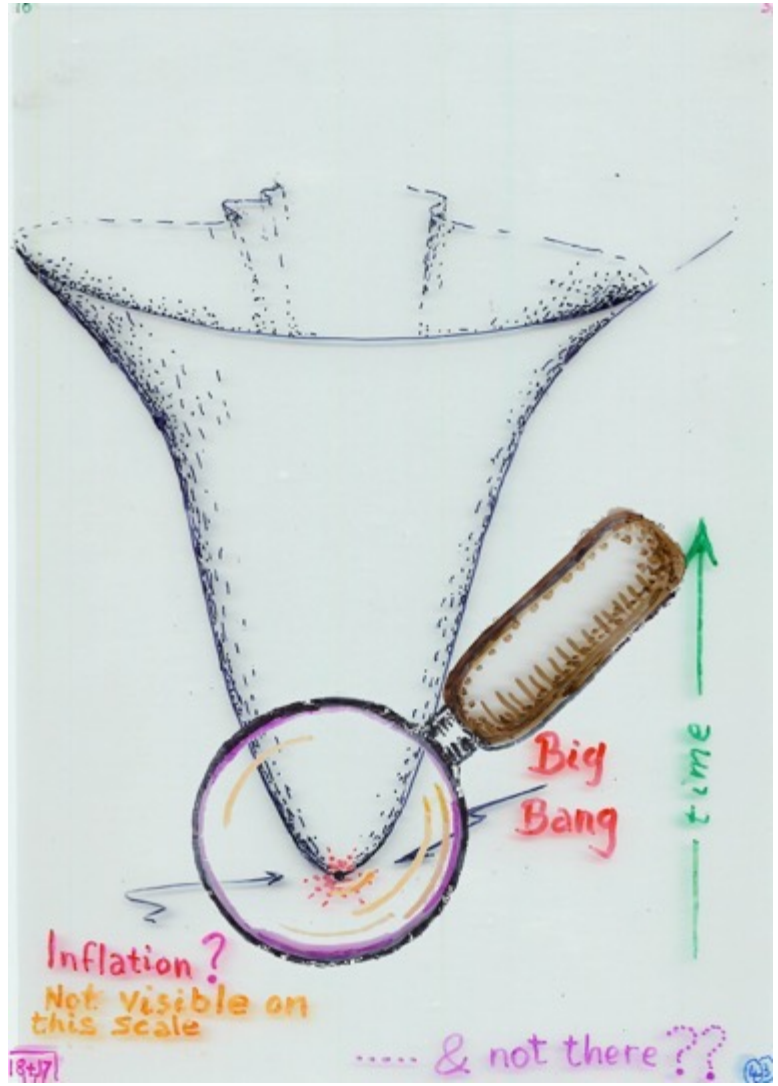
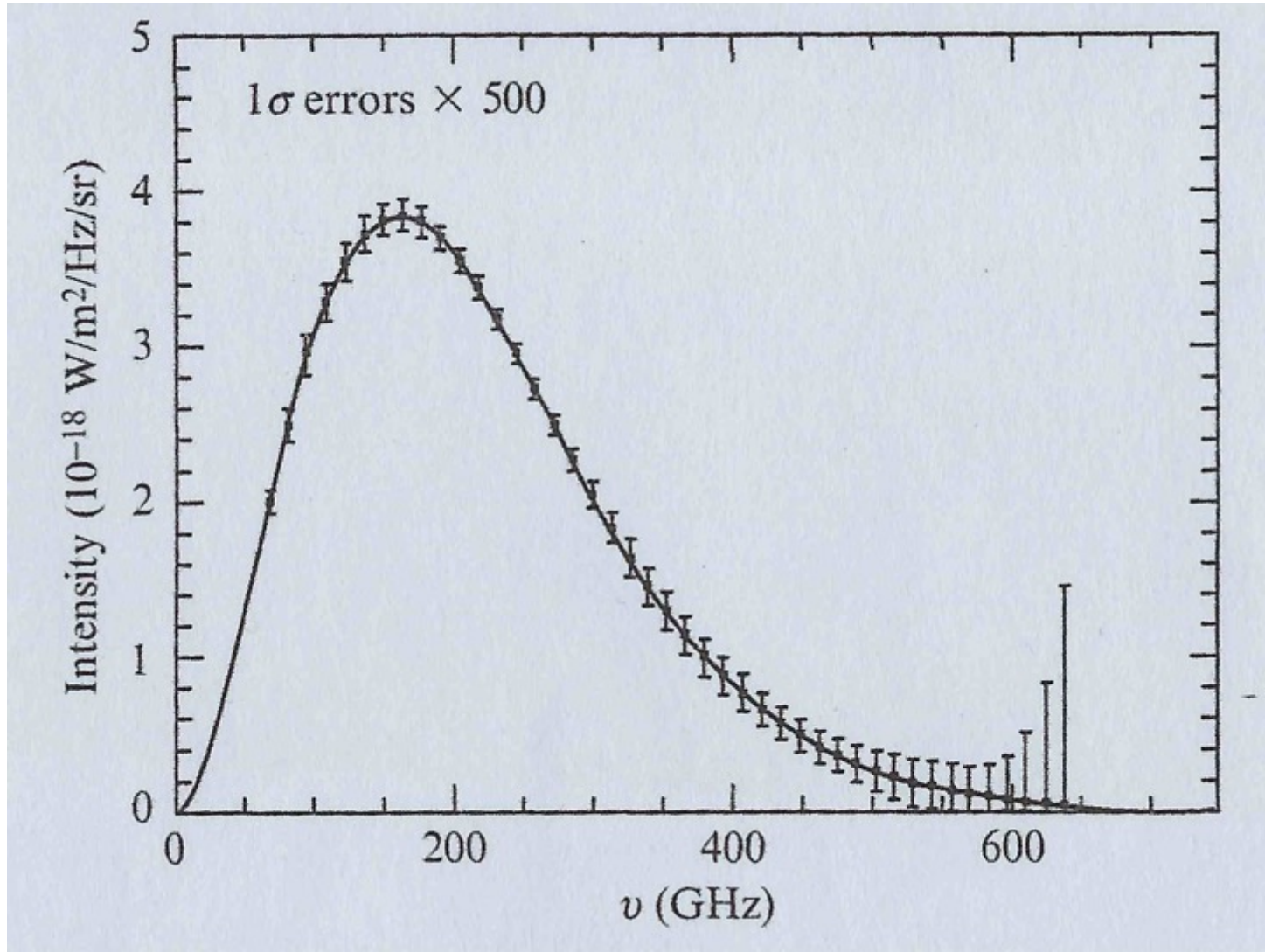
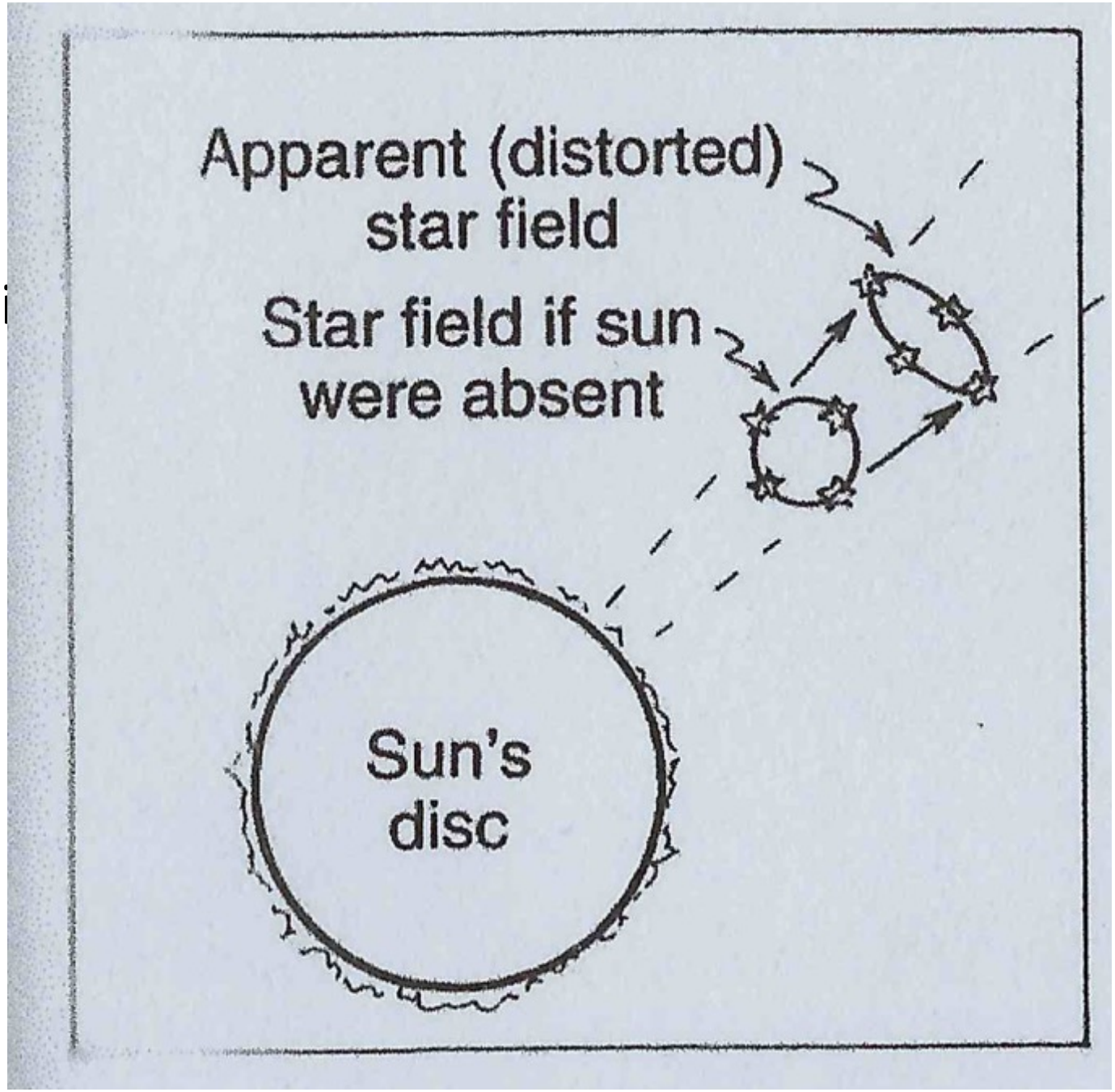

Big
Bang
time
Inflation?
Not visible on
this scale
..... & not there??

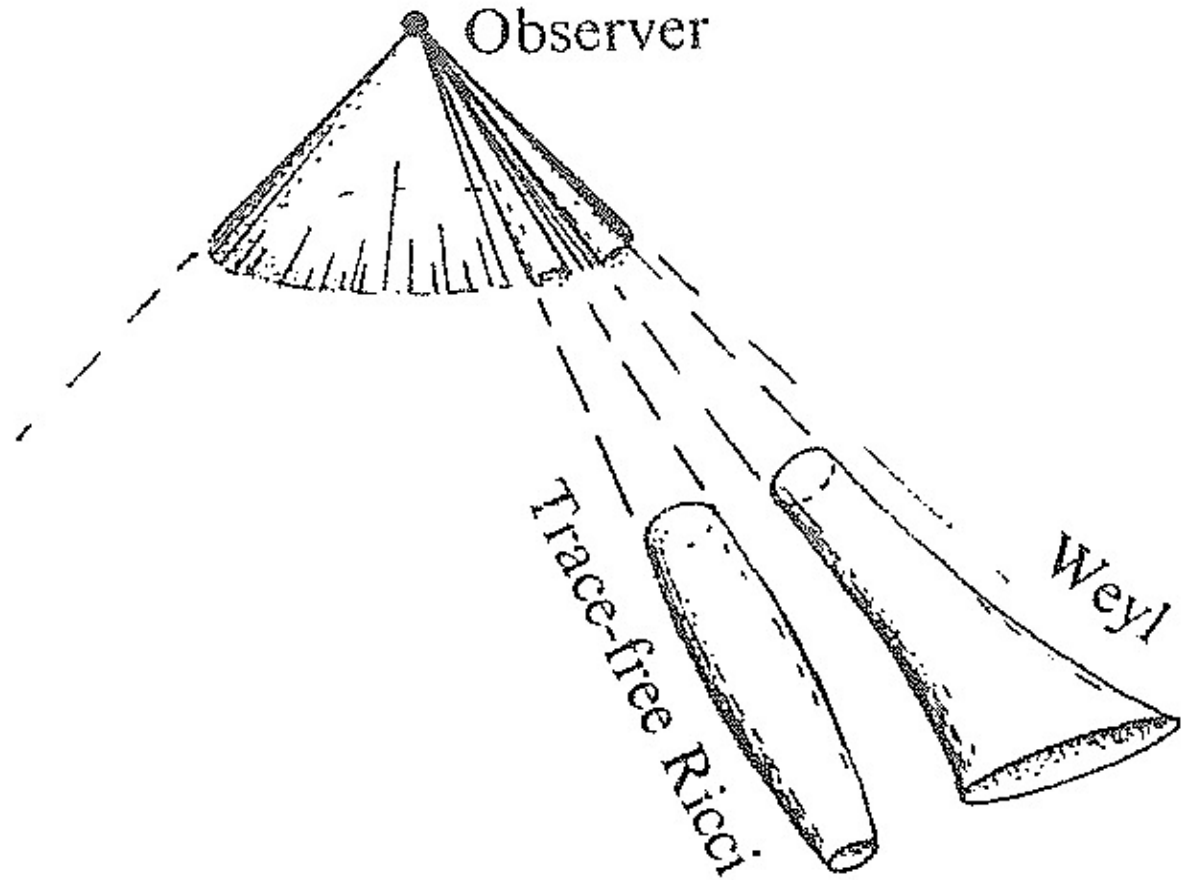
Inflation
Big
Bang


1σ errors × 500
Intensity (10−18 W/m2/Hz/sr)
0
1
2
3
4
5
0
200
400
600
υ (GHz)

Gas
(a)
Entropy increases
Time
Gravitating bodies
(b)

- Petrona Wi


Apparent (distorted)
star field
Star field if sun
were absent
Sun's
disc


Observer
Trace-free Ricci
Weyl

Space-time Singularities

Cannot be a purely quantum-gravity problem. because:

for singularities in black holes

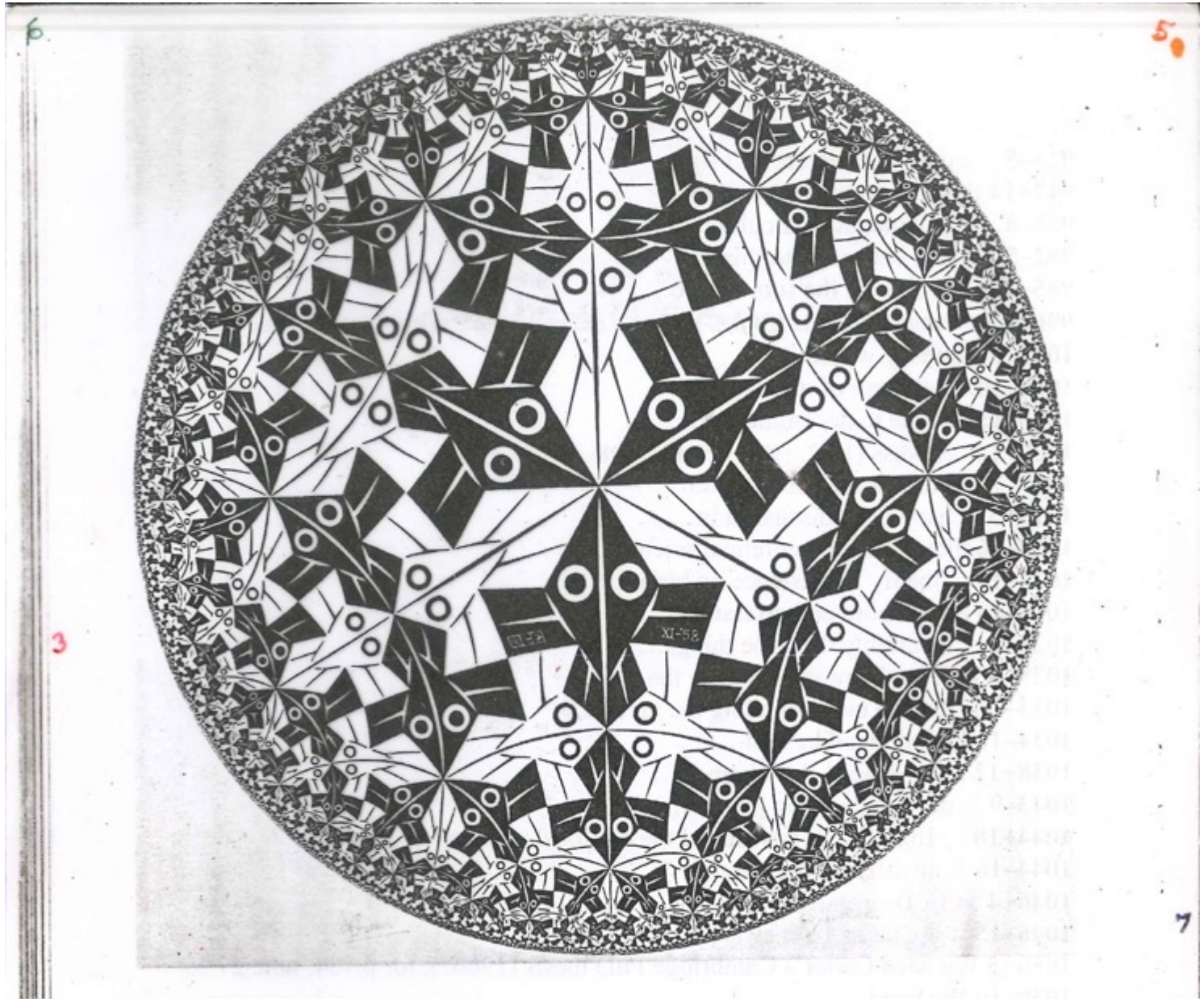
Weyl curvature → ∞

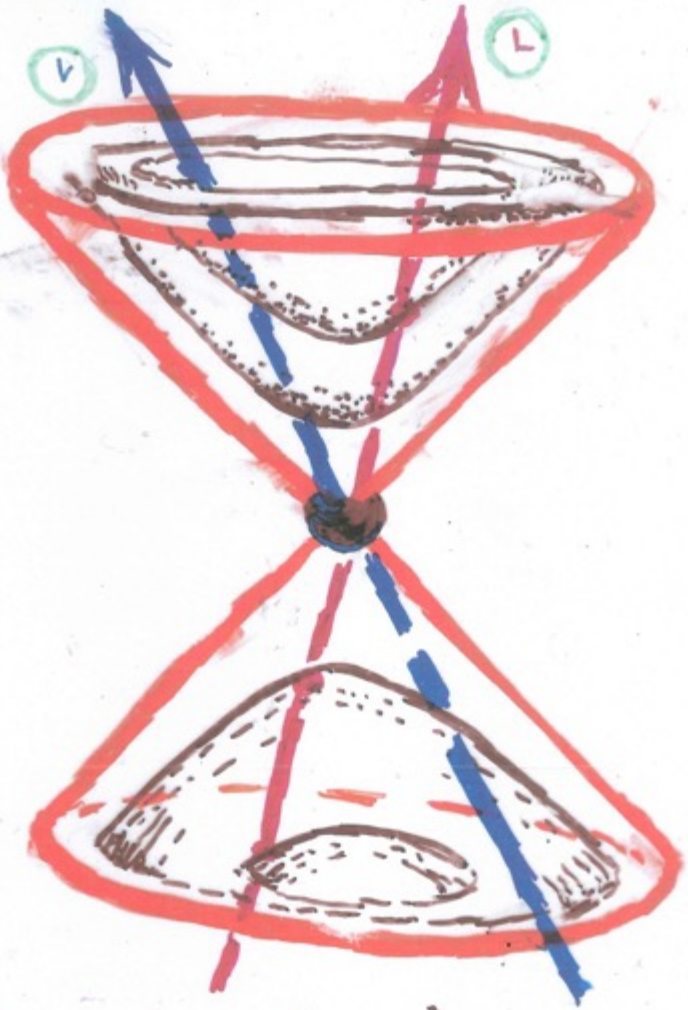
for the Big Bang

Weyl curvature → 0

∴ Time-asymmetric theory!

∞ compression
conformal map
∞ expansion

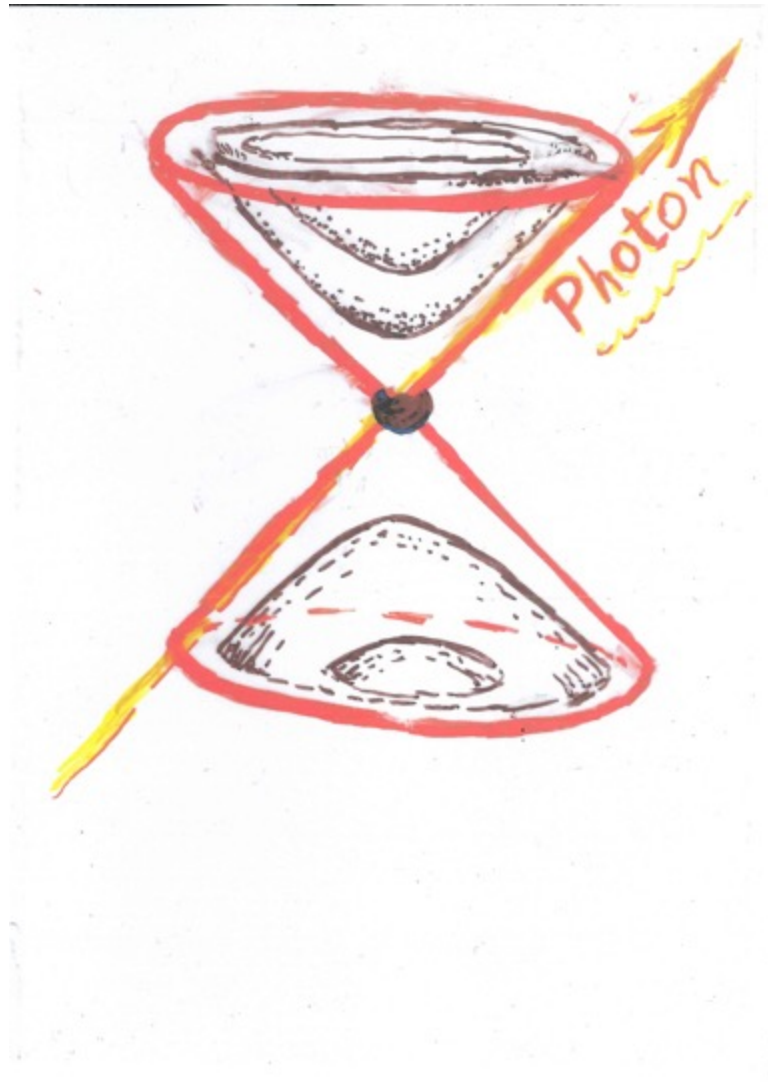


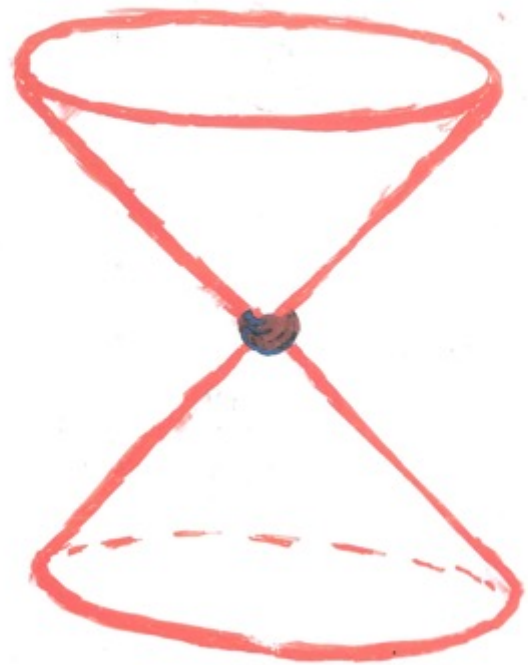


$$E = mc^2$$

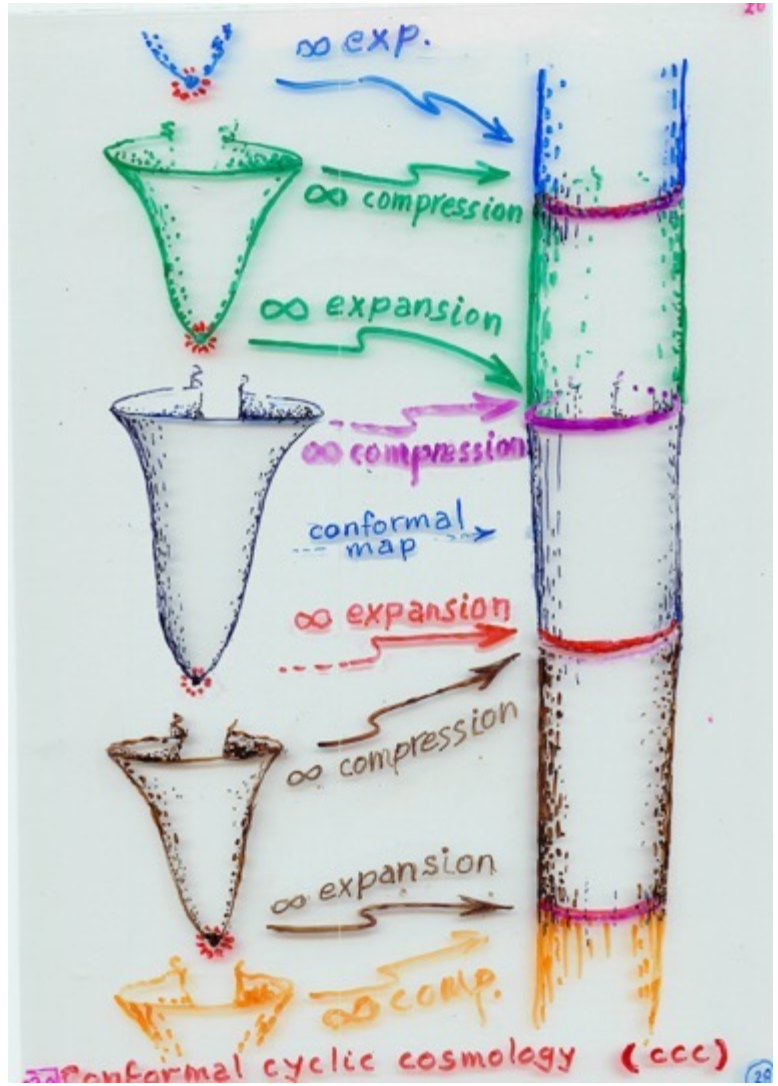
$$E = h\nu$$

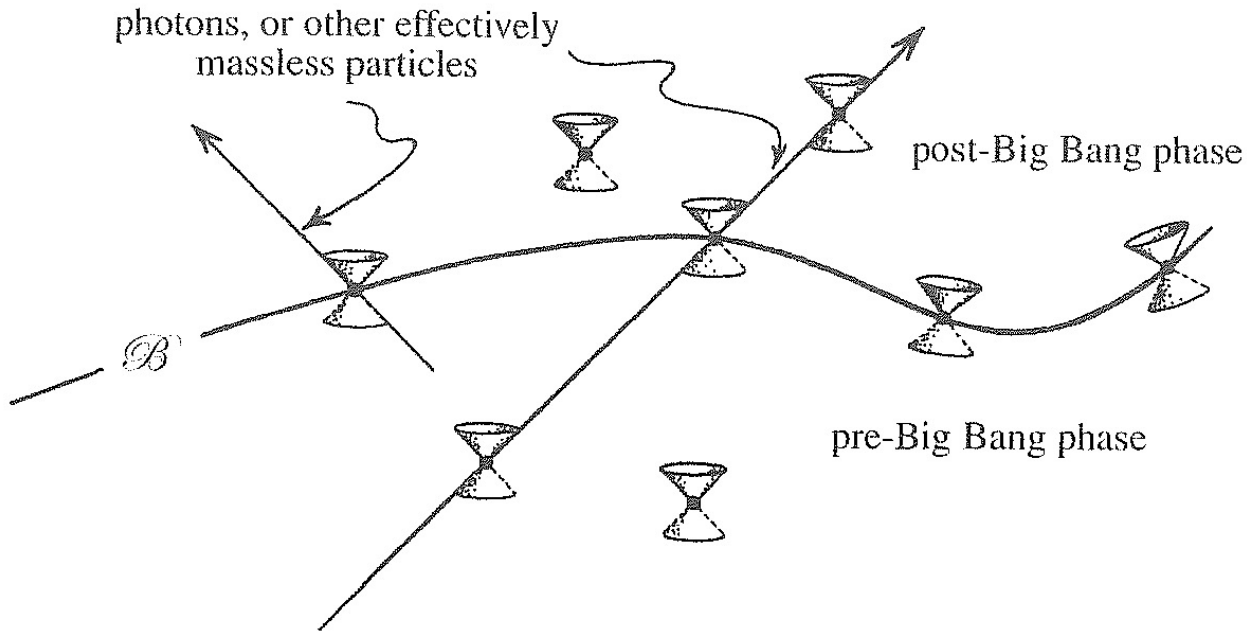
$$\nu = m\left(\frac{c^2}{h}\right)$$


Photon

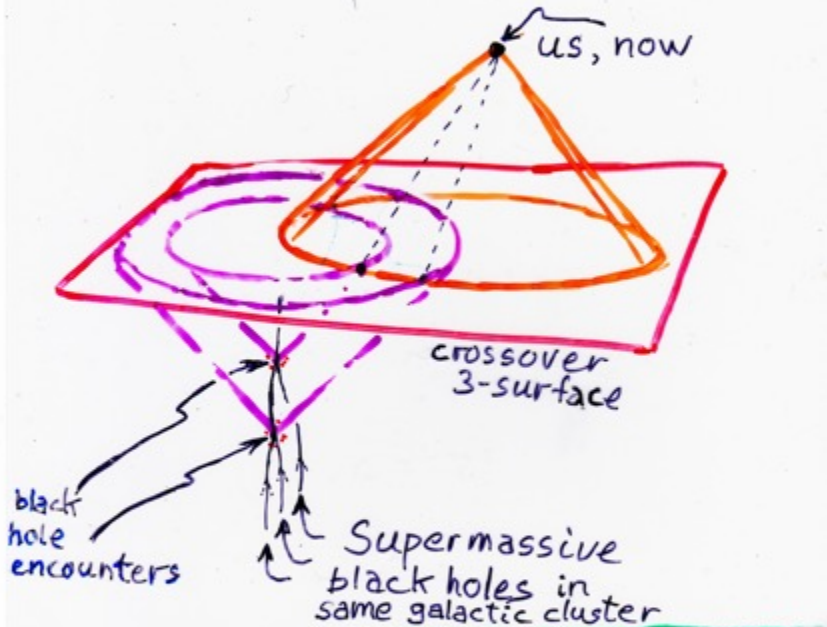


∞ compression
conformal map
∞ expansion


∞ exp.
∞ compression
∞ expansion
∞ compression
conformal map
∞ expansion
∞ compression
∞ expansion
∞ comp.
Conformal cyclic cosmology (ccc)

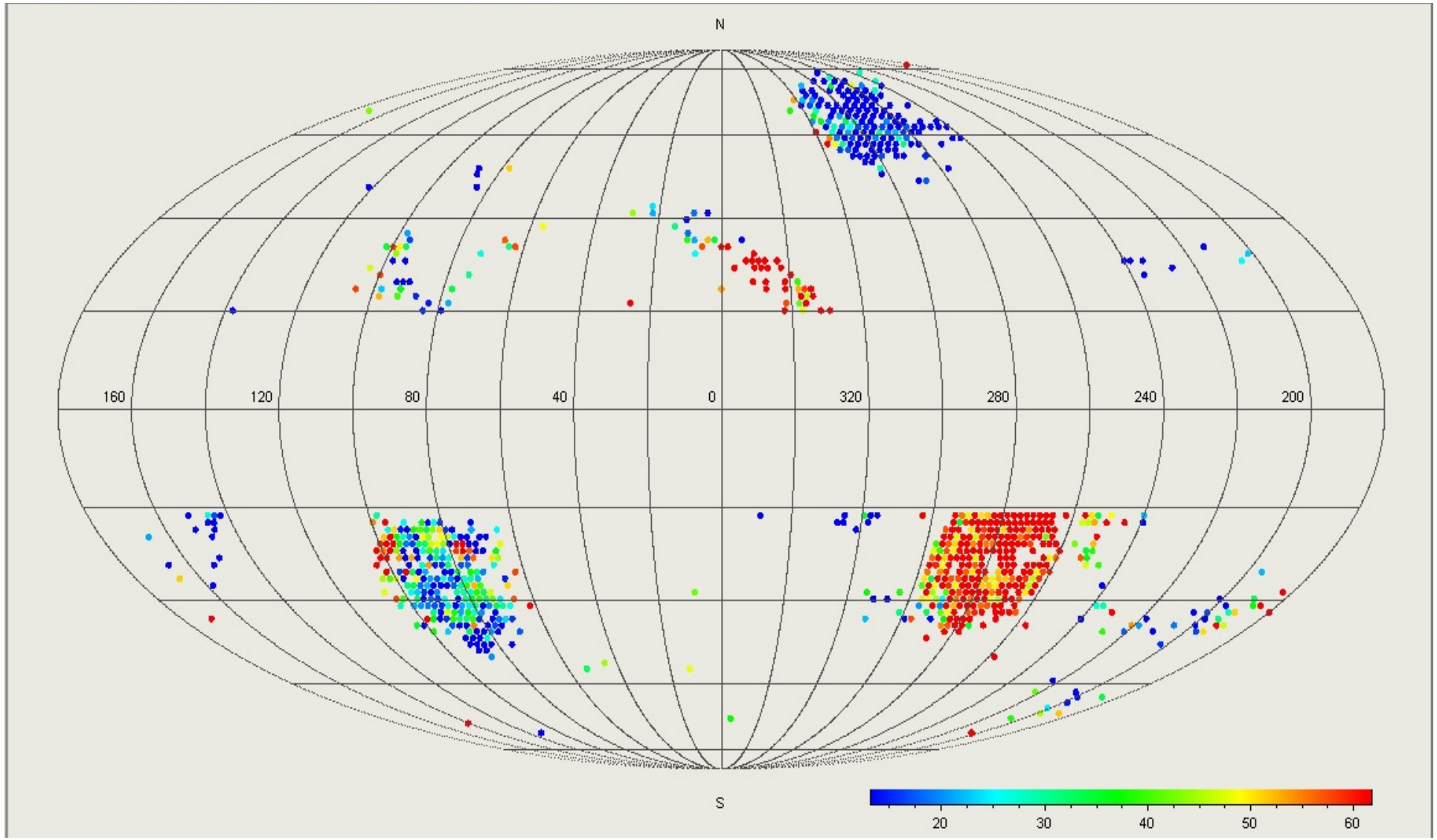

photons, or other effectively
massless particles
post-Big Bang phase
$\mathscr{B}$
pre-Big Bang phase

Can we "see" through into the aeon prior to ours?



- atypical temperature
  - better diagnos
- low variance
- concentric rings

V. Gurzadyan


N
160
120
80
40
0
320
280
240
200
S
20
30
40
50
60

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