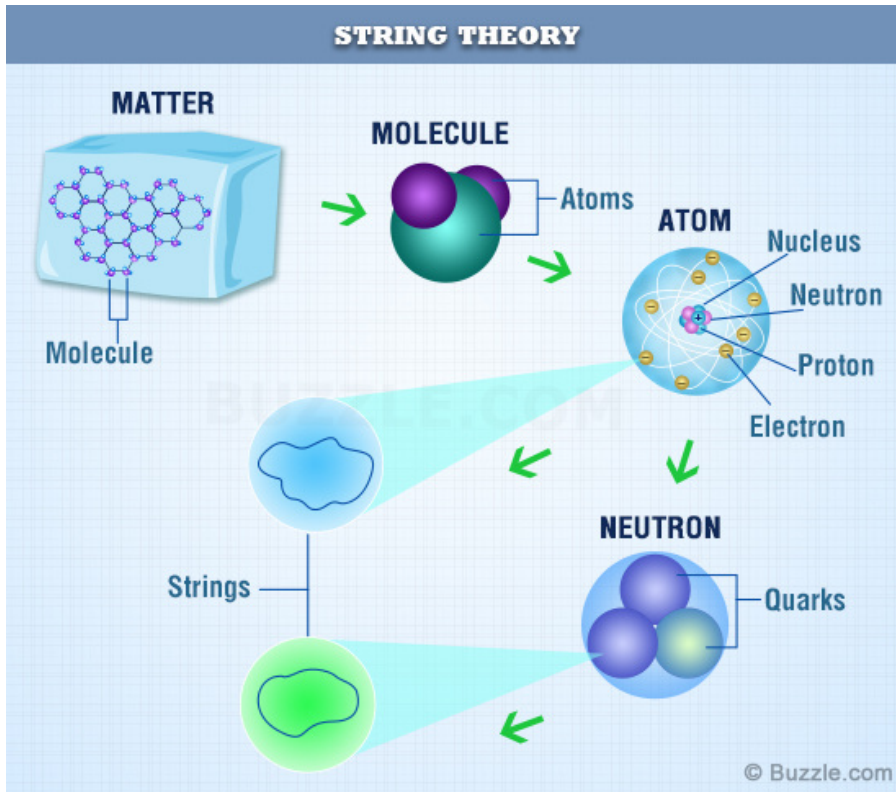


Efniseindir og víxlverkanir

Efniseindir

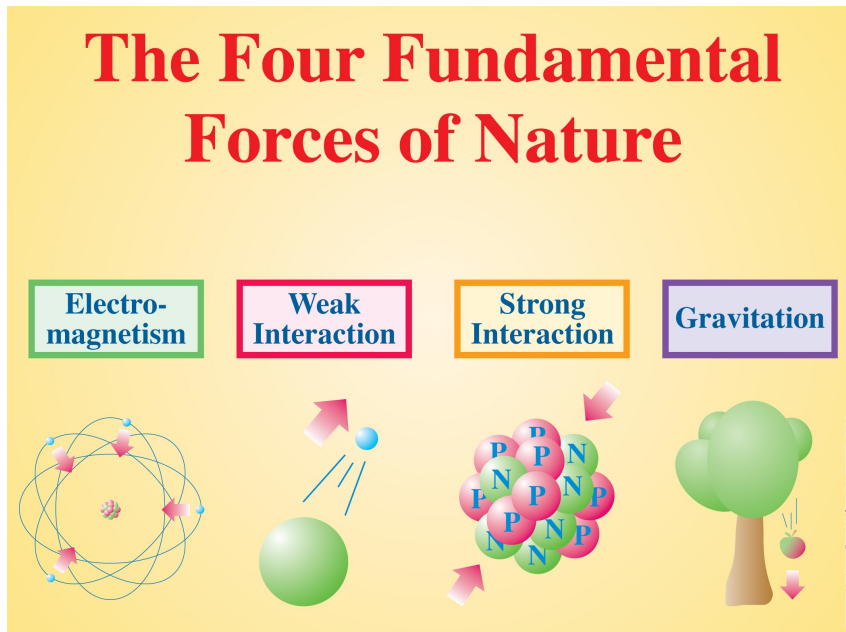


Frá stórsæjum hlutum til minnstu öreinda. Skv. vinsælustu kenningu samtímans eru þær ekki punktar heldur strengir.

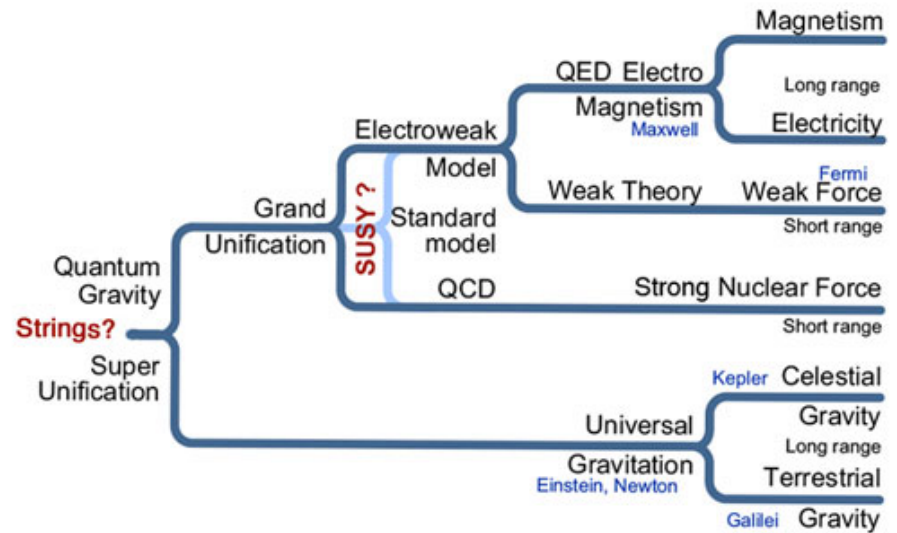
mass →	≈2.3 MeV/c ²	≈1.275 GeV/c ²	≈173.07 GeV/c ²	0	≈126 GeV/c ²
charge →	2/3	2/3	2/3	0	0
spin →	1/2	1/2	1/2	1	0
	u up	c charm	t top	g gluon	H Higgs boson
QUARKS					
mass →	≈4.8 MeV/c ²	≈95 MeV/c ²	≈4.18 GeV/c ²	0	
charge →	-1/3	-1/3	-1/3	0	
spin →	1/2	1/2	1/2	1	
	d down	s strange	b bottom	γ photon	
LEPTONS					
mass →	0.511 MeV/c ²	105.7 MeV/c ²	1.777 GeV/c ²	91.2 GeV/c ²	
charge →	-1	-1	-1	0	
spin →	1/2	1/2	1/2	1	
	e electron	μ muon	τ tau	Z Z boson	
GAUGE BOSONS					
mass →	<2.2 eV/c ²	<0.17 MeV/c ²	<15.5 MeV/c ²	80.4 GeV/c ²	
charge →	0	0	0	±1	
spin →	1/2	1/2	1/2	1	
	ν_e electron neutrino	ν_μ muon neutrino	ν_τ tau neutrino	W W boson	

Smæstu eindir alheimsins samkvæmt staðallíkani öreindafræðinnar. Strengjafræðin spáir því að þær eigi sér (ofursamhverfar) systureindir, en slíkar eindir hafa enn ekki fundist.

Grunnkraftar - víxlverkanir



Frumkraftar náttúrunnar

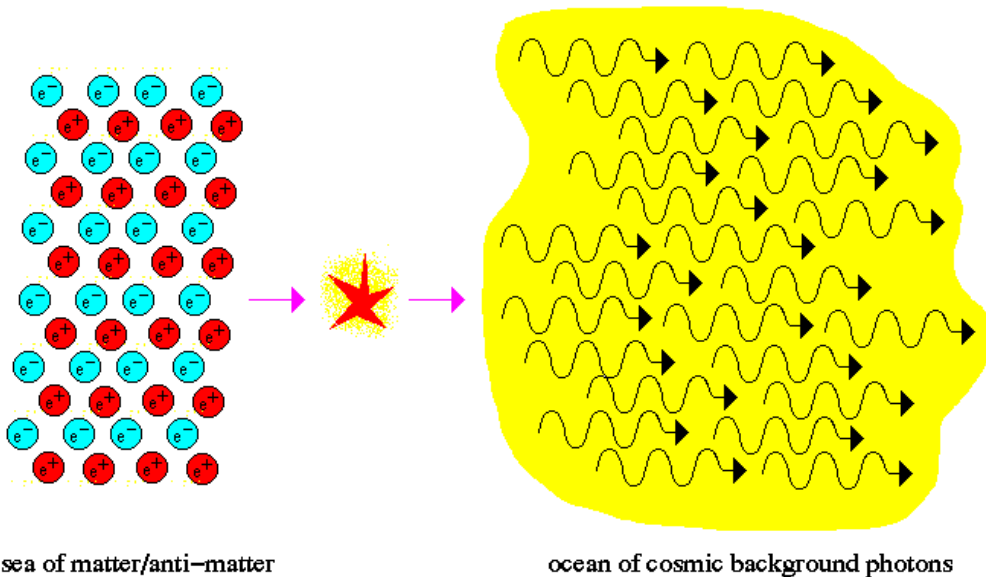


Hugmyndir (flestra) öreindafræðinga um sameiningu frumkraftanna í einn allsherjar grunnkraft

Efni og andefni

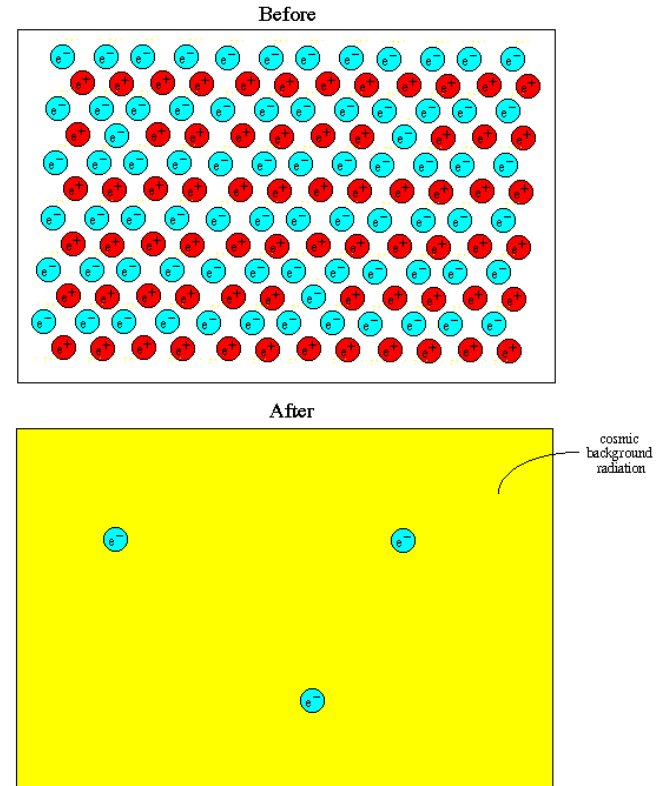
Annihilation

since matter and anti-matter are produced in equal numbers, the endresult will be a massive annihilation of all particles



Á tímabilinu 10^{-12} til 10^{-6} sek eftir Miklahvell sameinast eindir og andeindir og eyðast, þannig að úr verður geislun (ljóseindir örbylgjukliðsins). Hvernig stendur þá á því að eitthvað er eftir af efninu en ekkert andefni?

Baryon Number

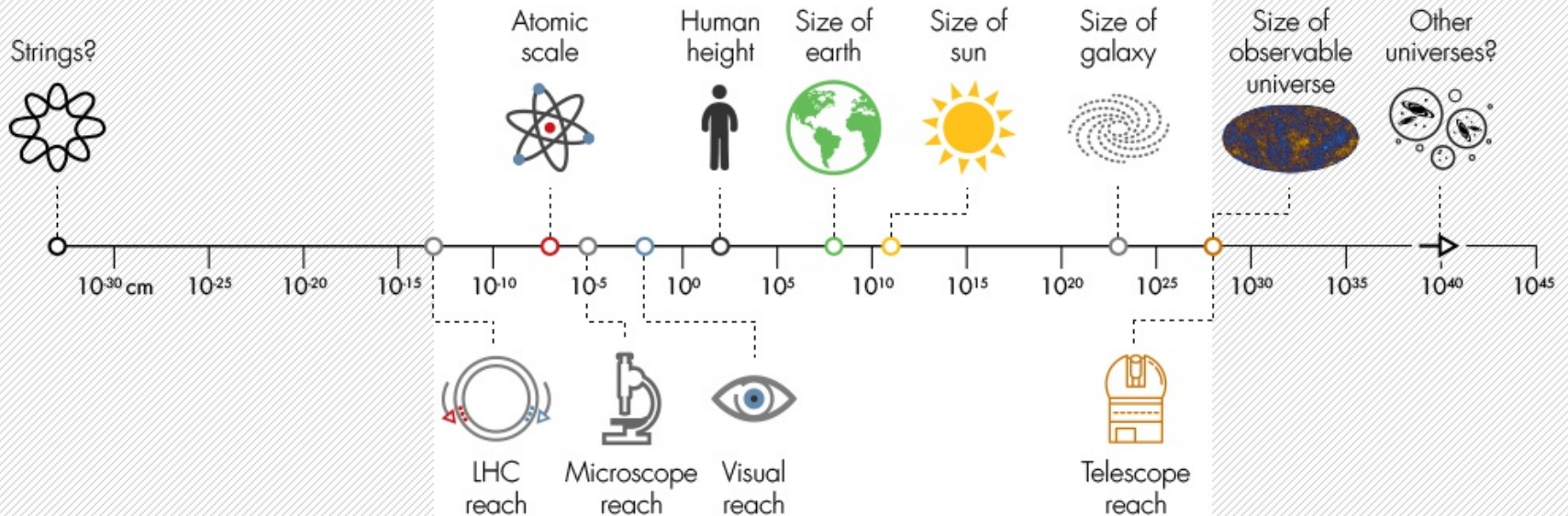


Í alheimi er nú u.þ.b. milljarður ljóseinda fyrir hverja efniseind

Þekkingarsvið mannkyns

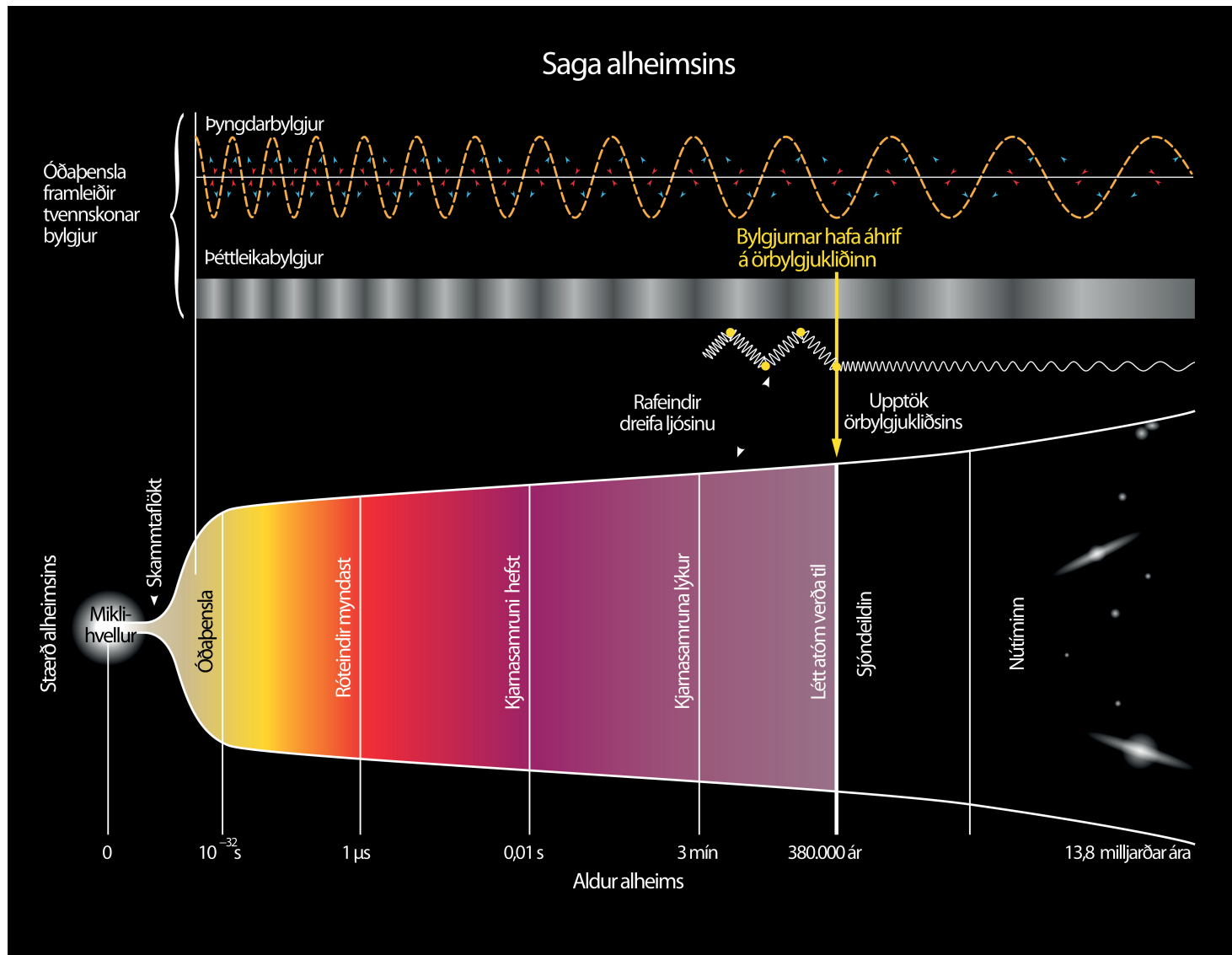
The Ends of Evidence

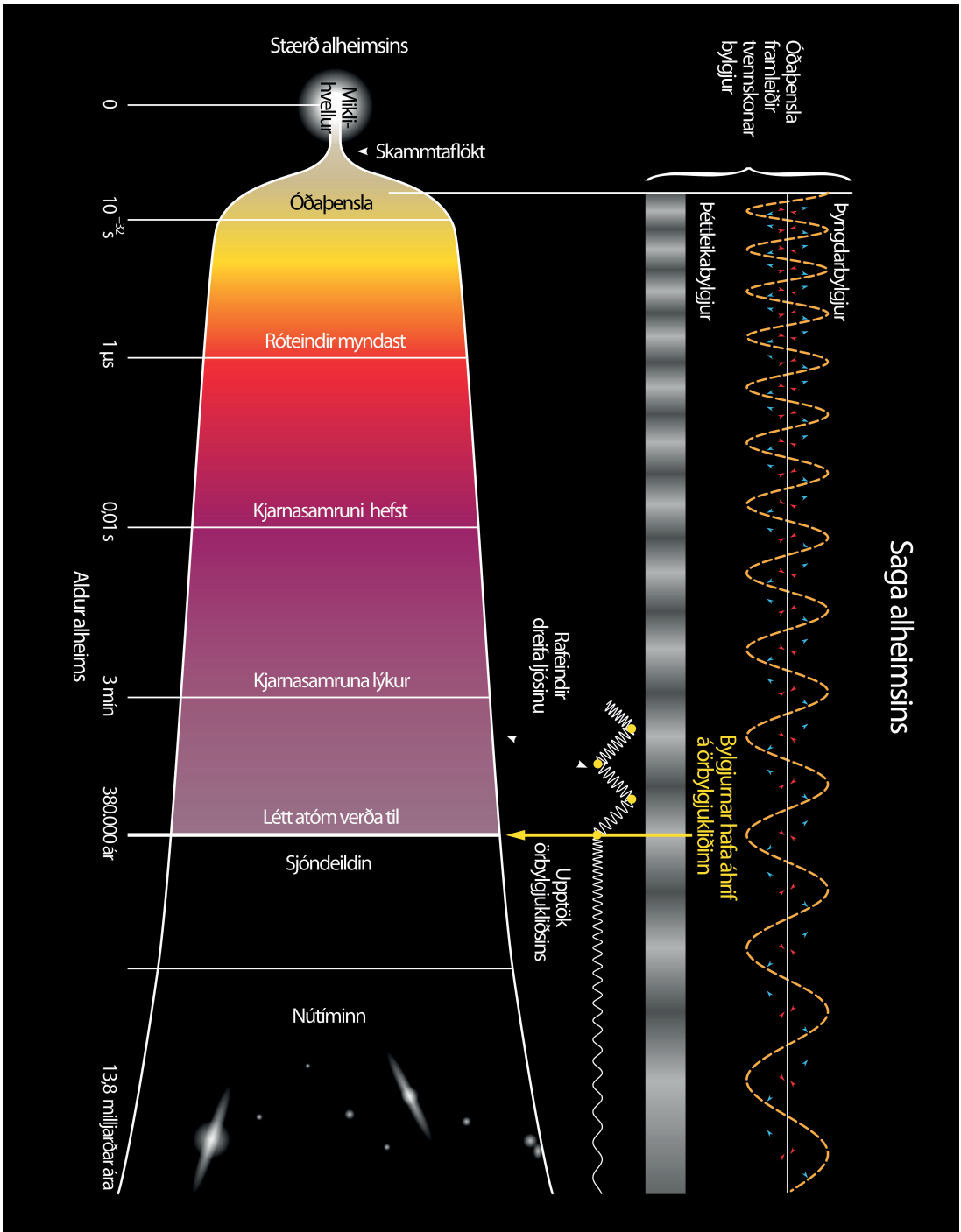
Humans can probe the universe over a vast range of scales (white area), but many modern physics theories involve scales outside of this range (grey).



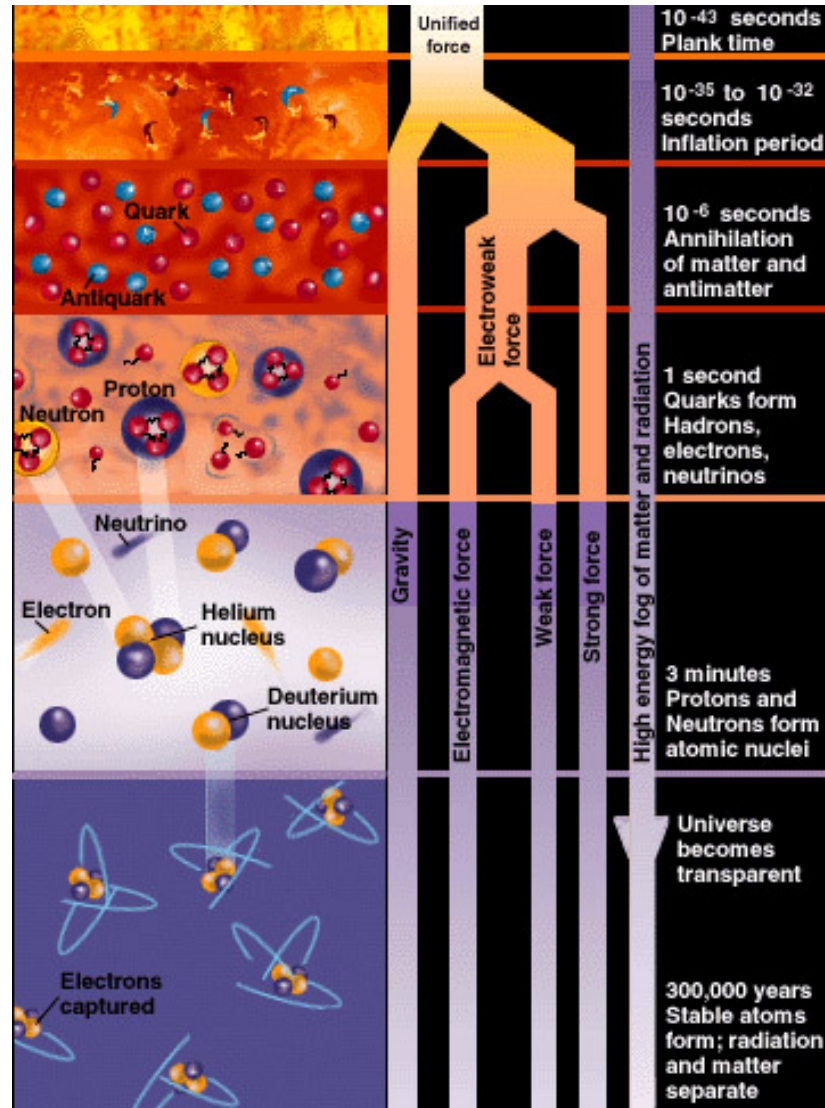
Saga alheimsins

Hin ýmsu skeið í sögu alheims



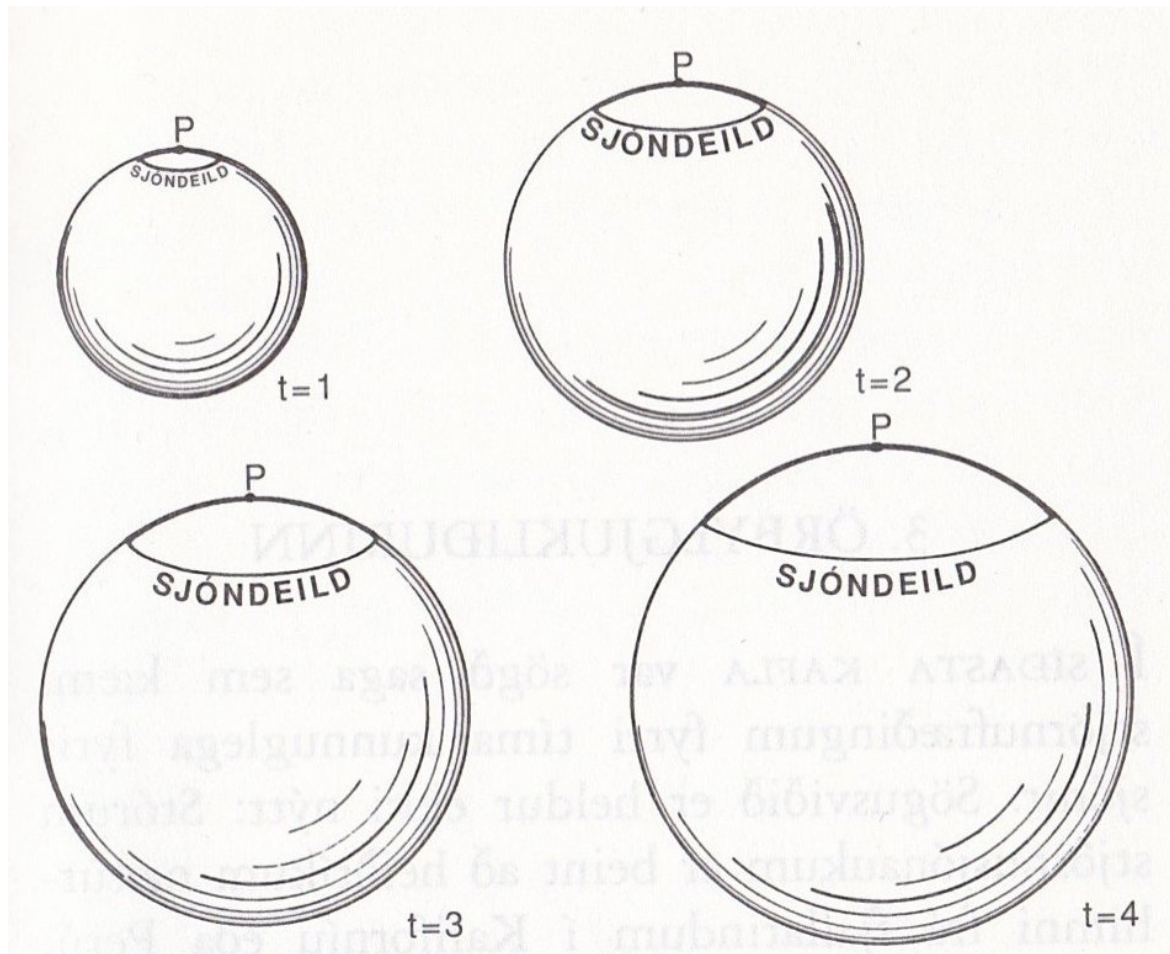


Þróunin fyrstu 3 mínúturnar

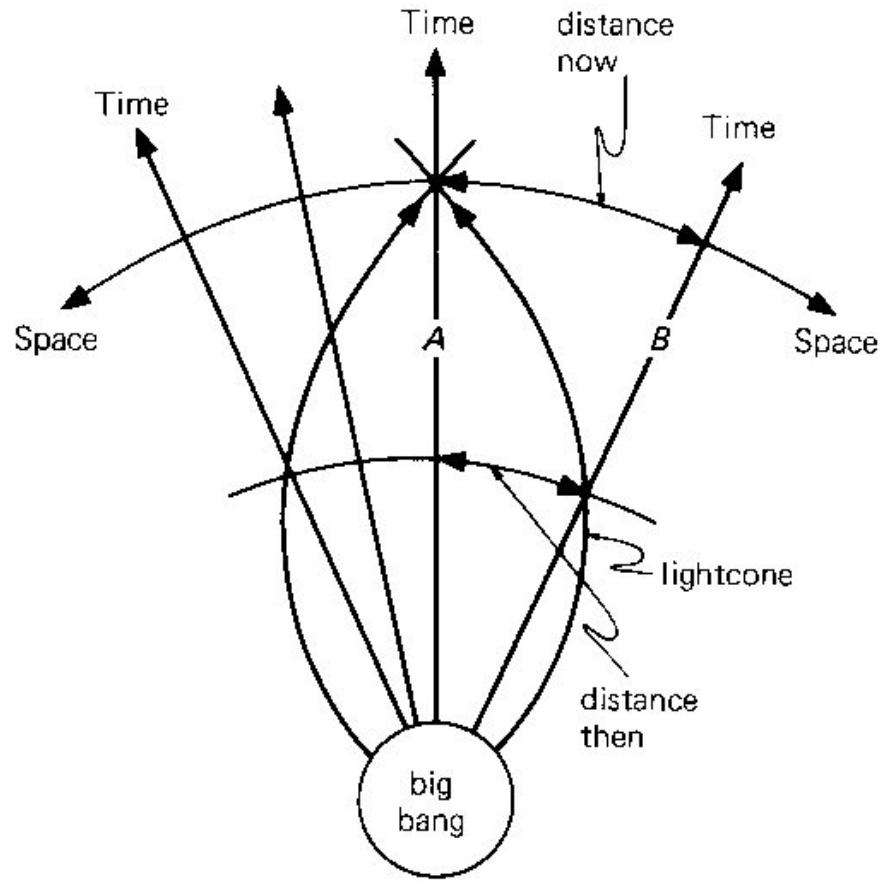


Sjóndeildir

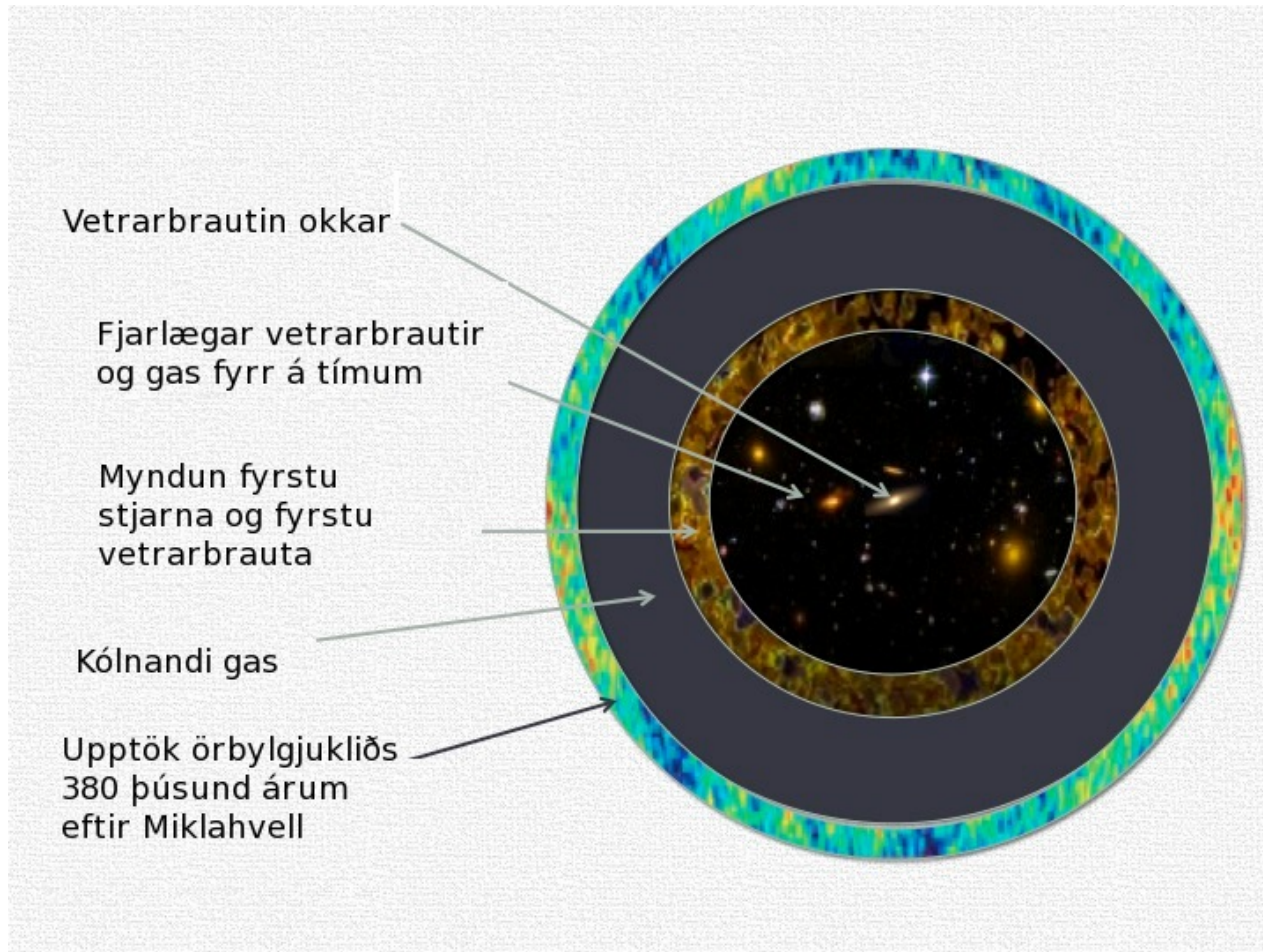
Agnasjóndeild



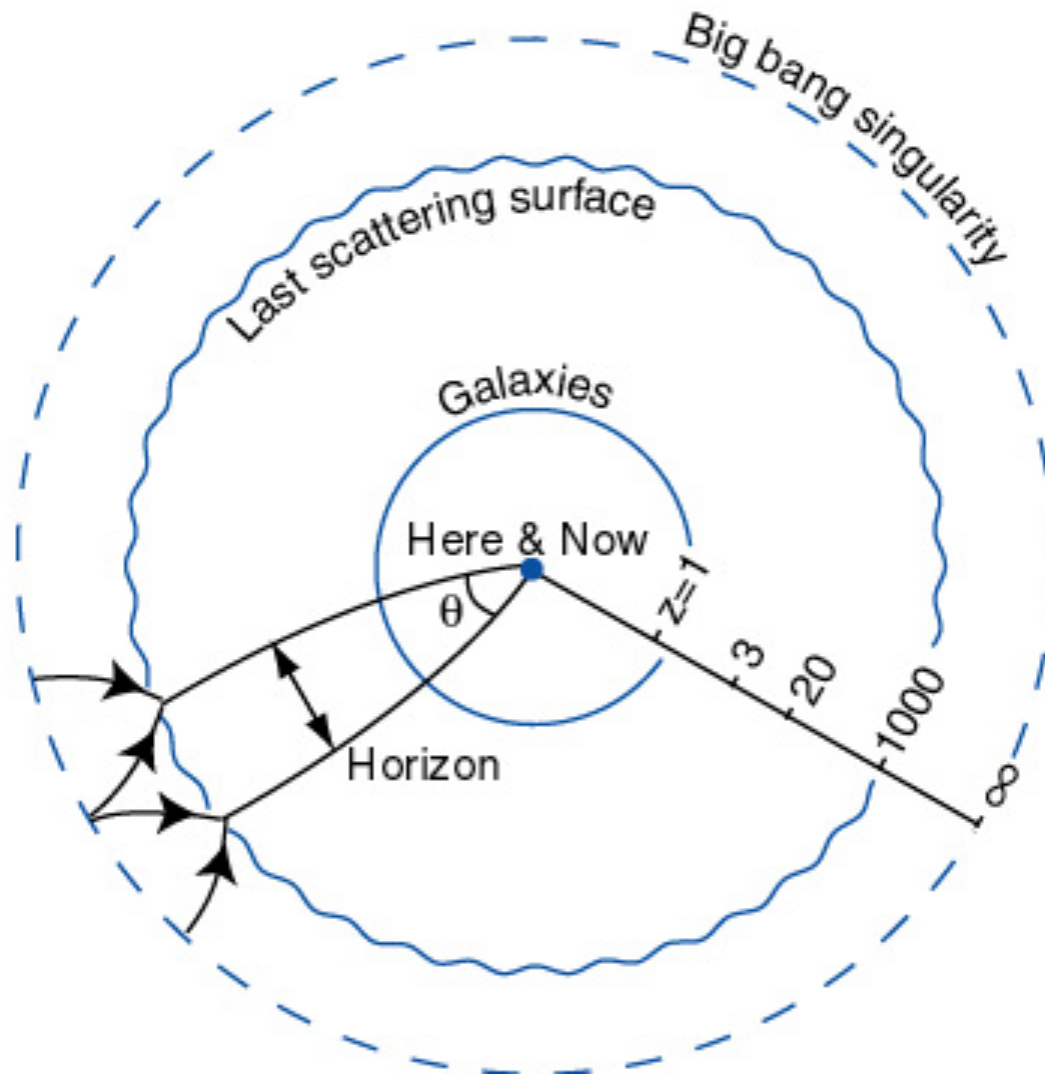
Fortíðarkeilan



Sýnilegur alheimur

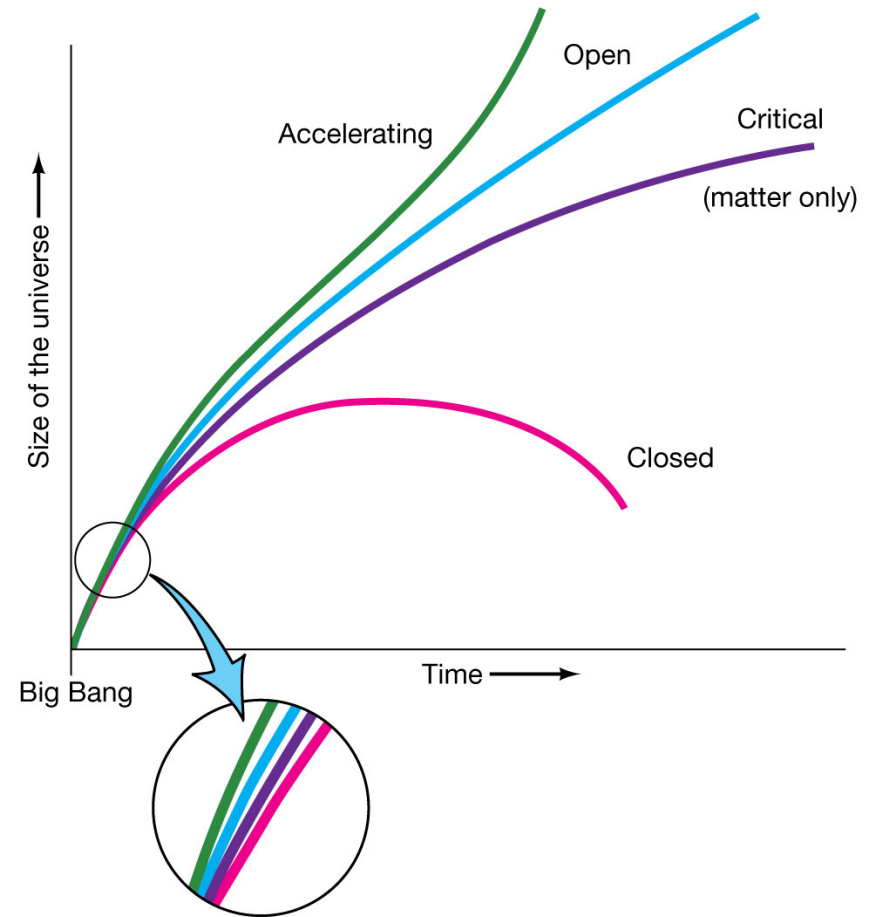
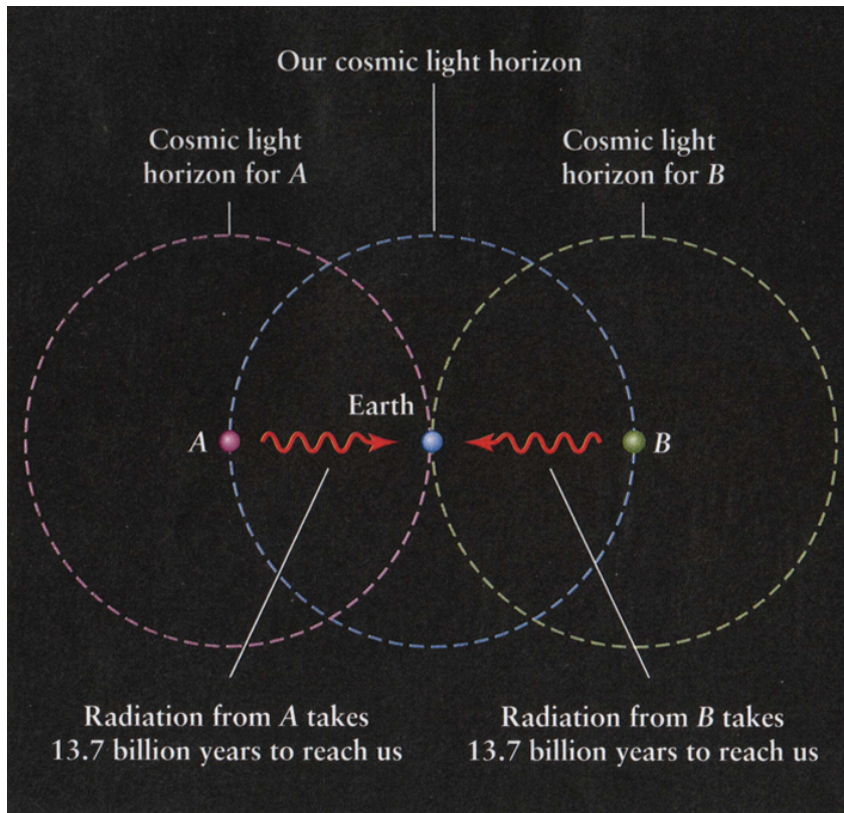


Orsakatengsl



Óðavensla

Vandamál í Miklahvellskenningunni

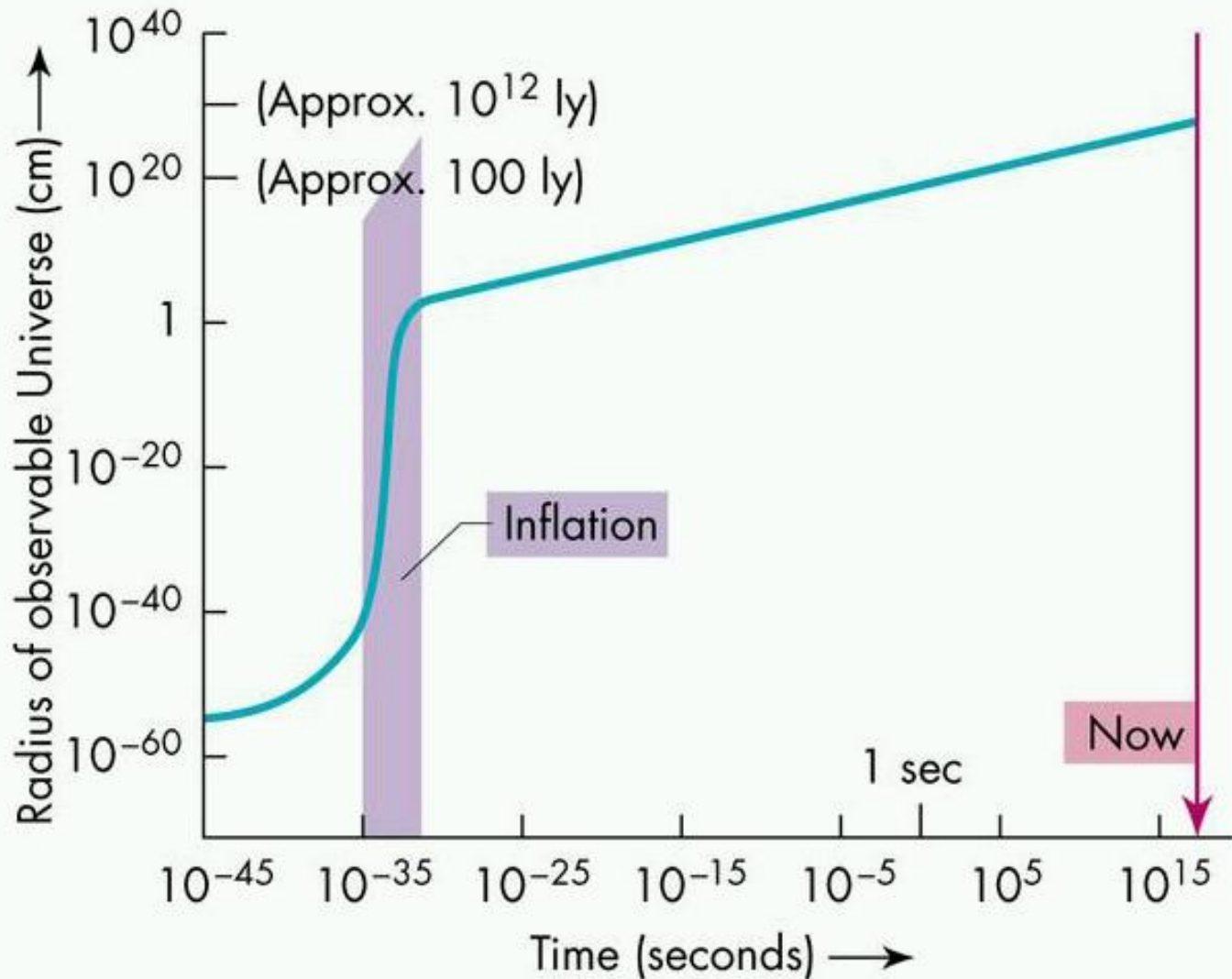


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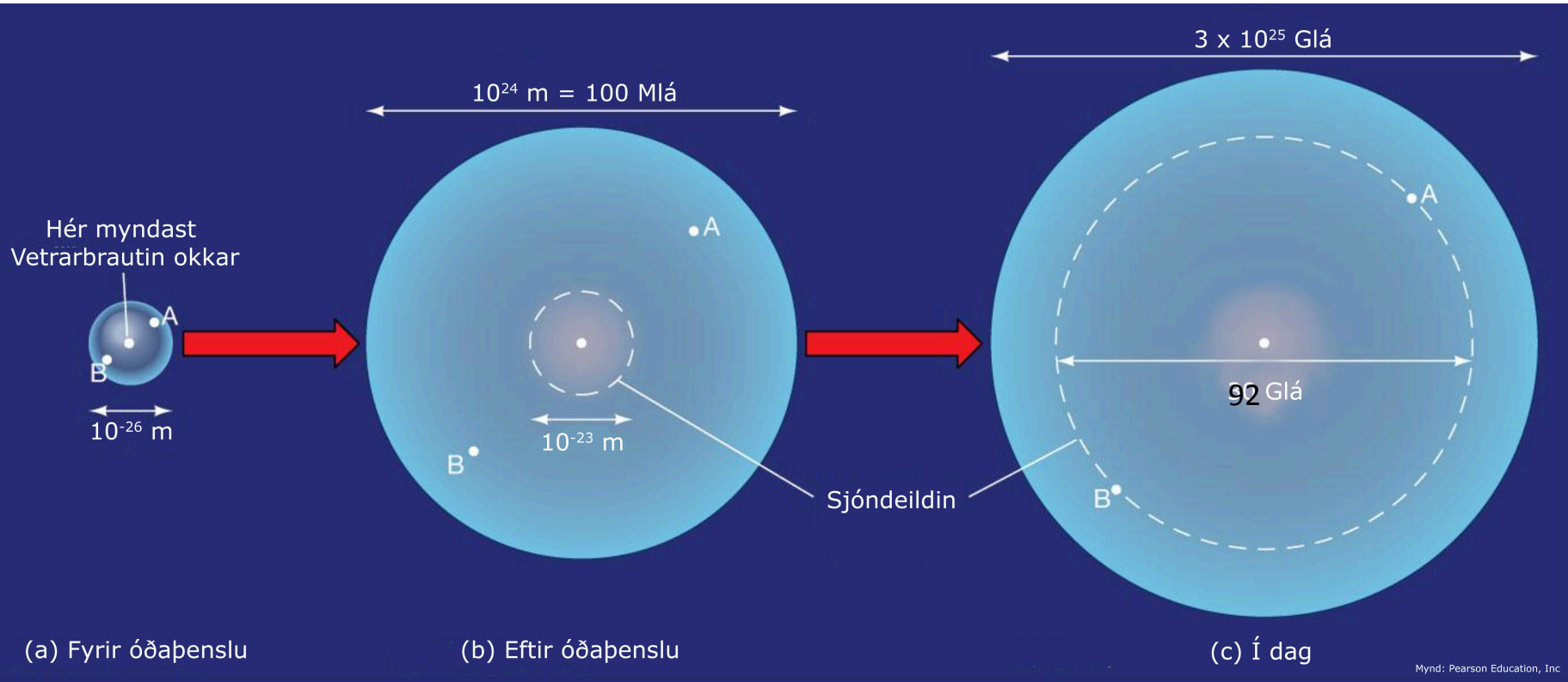
Jafn styrkur örbylgjukliðsins úr öllum áttum og orsakatengsl í frumheimi

Flatneskjuvandamálið

Óðarþensla

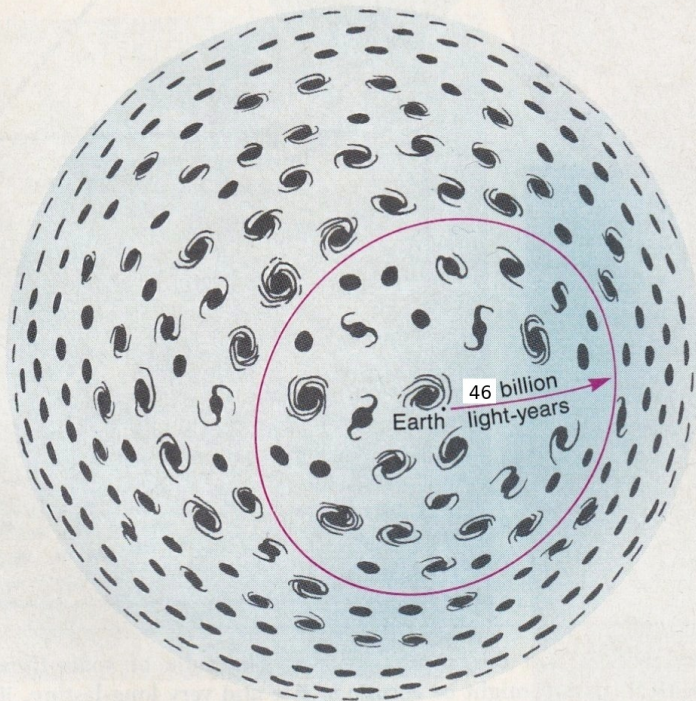


Óðapensla og agnasjóndeild 1



Óðábensla og agnasjóndeild 2

Old Big Bang Theory

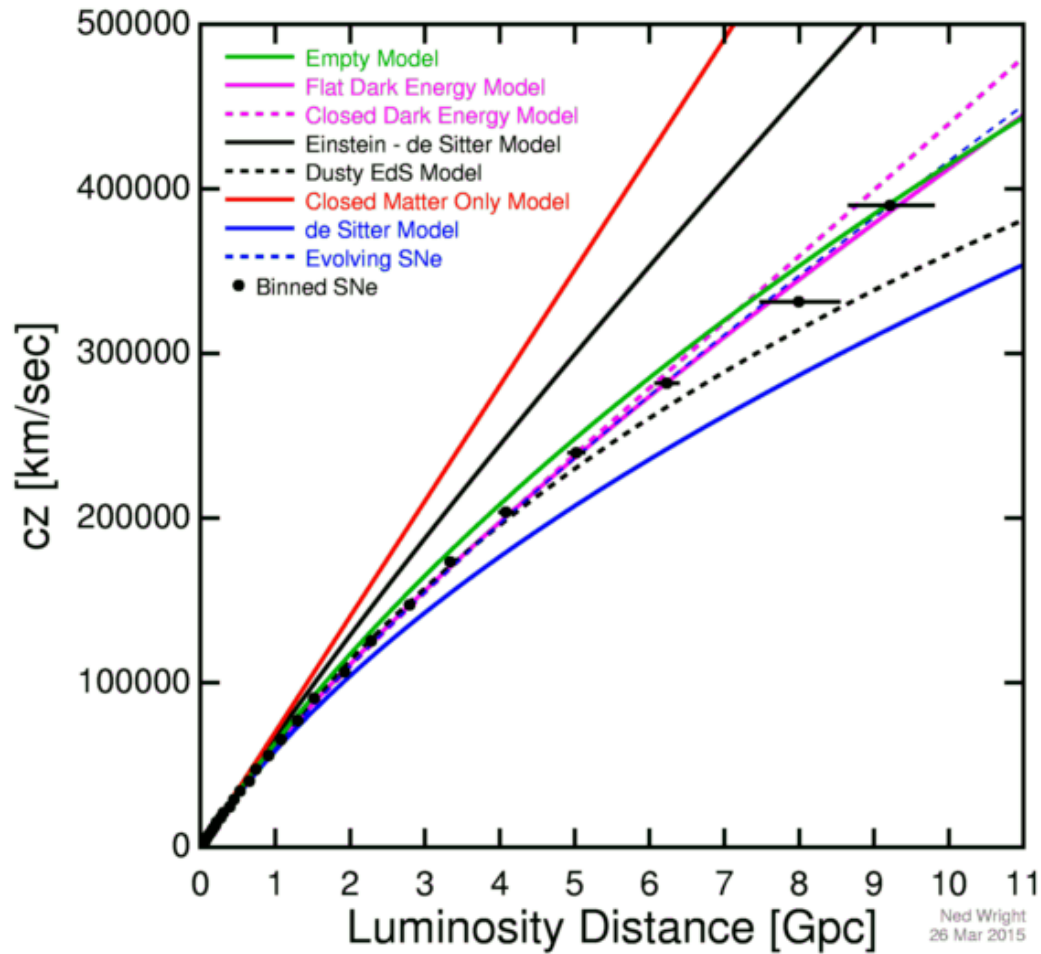


Inflationary Universe

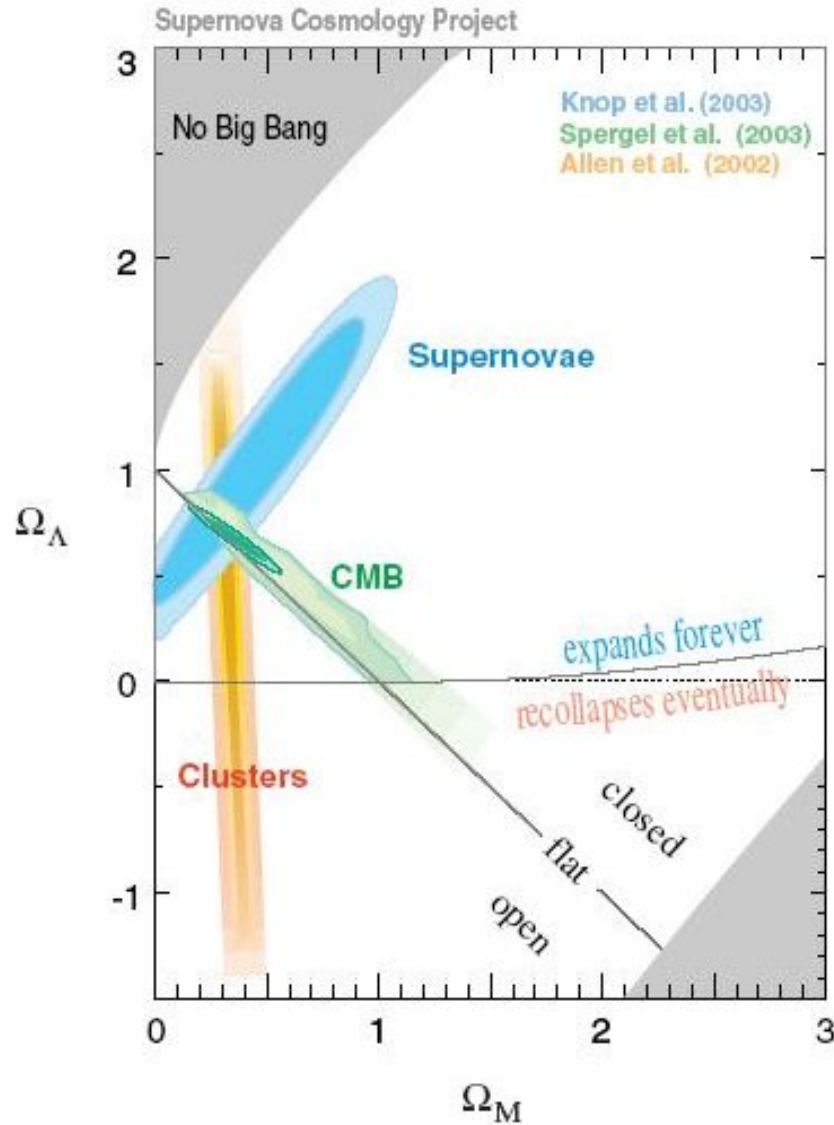


Heimsfasti - Hulduorka

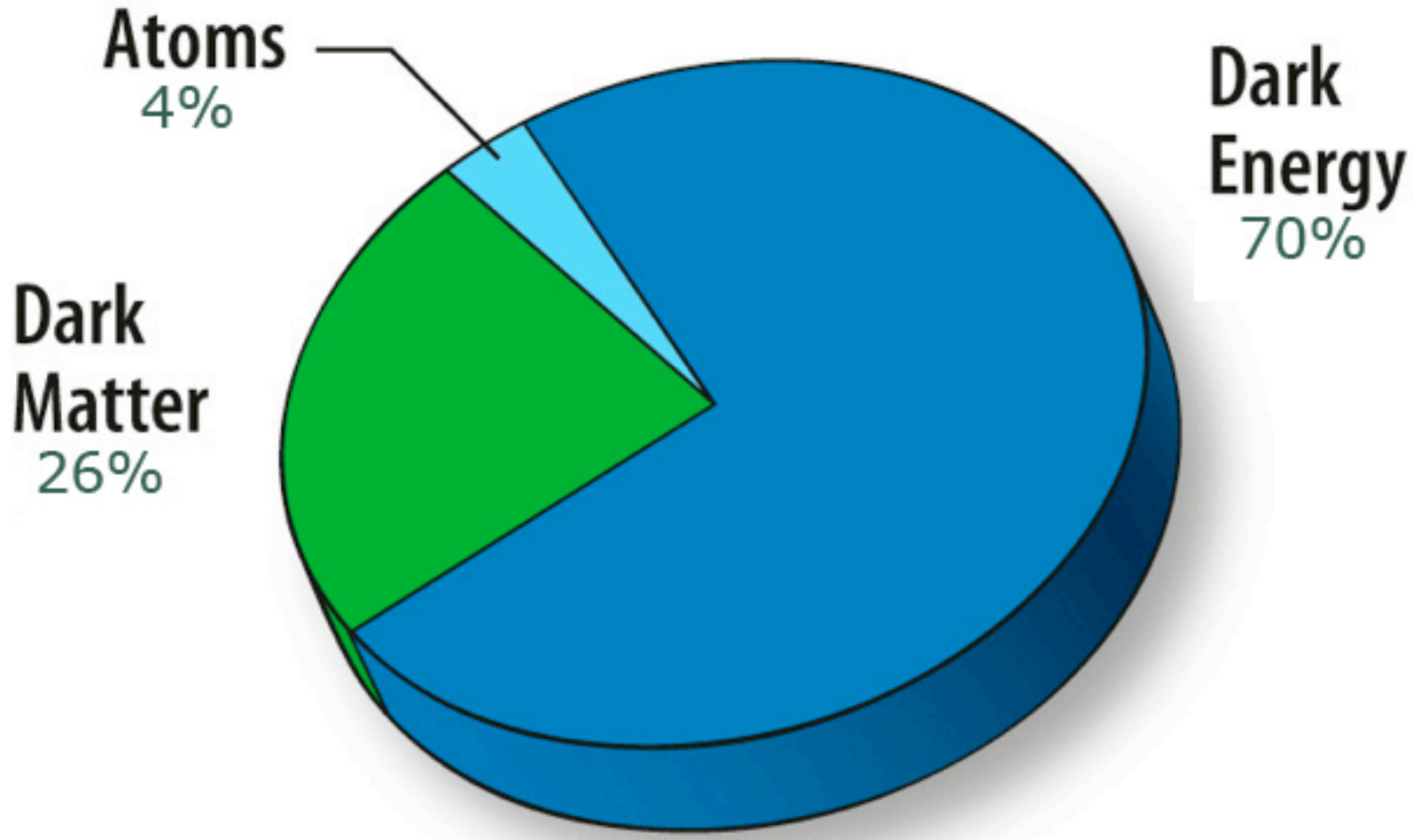
Hubbleslínurit frá 2015



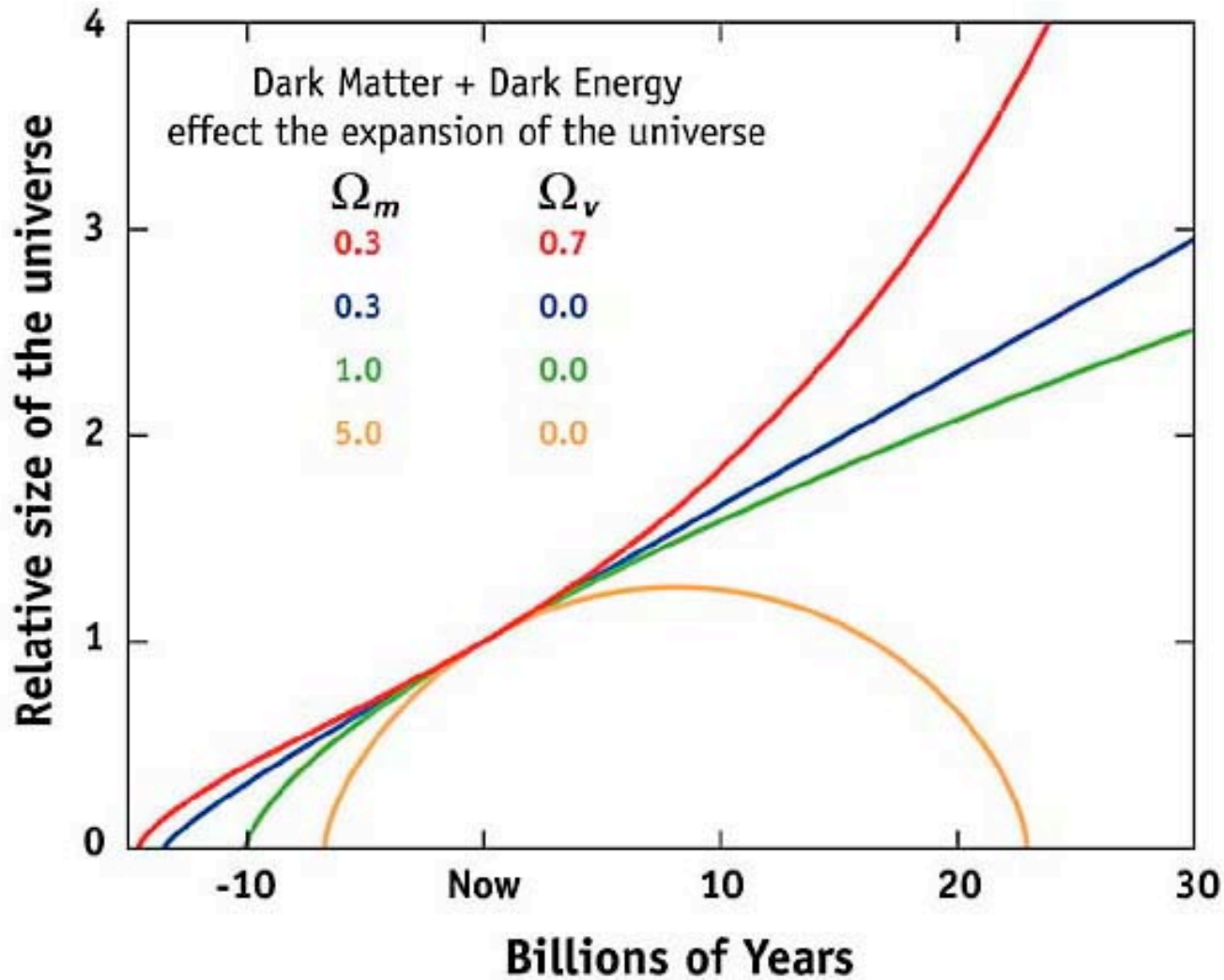
Vísbendingar um hulduorku



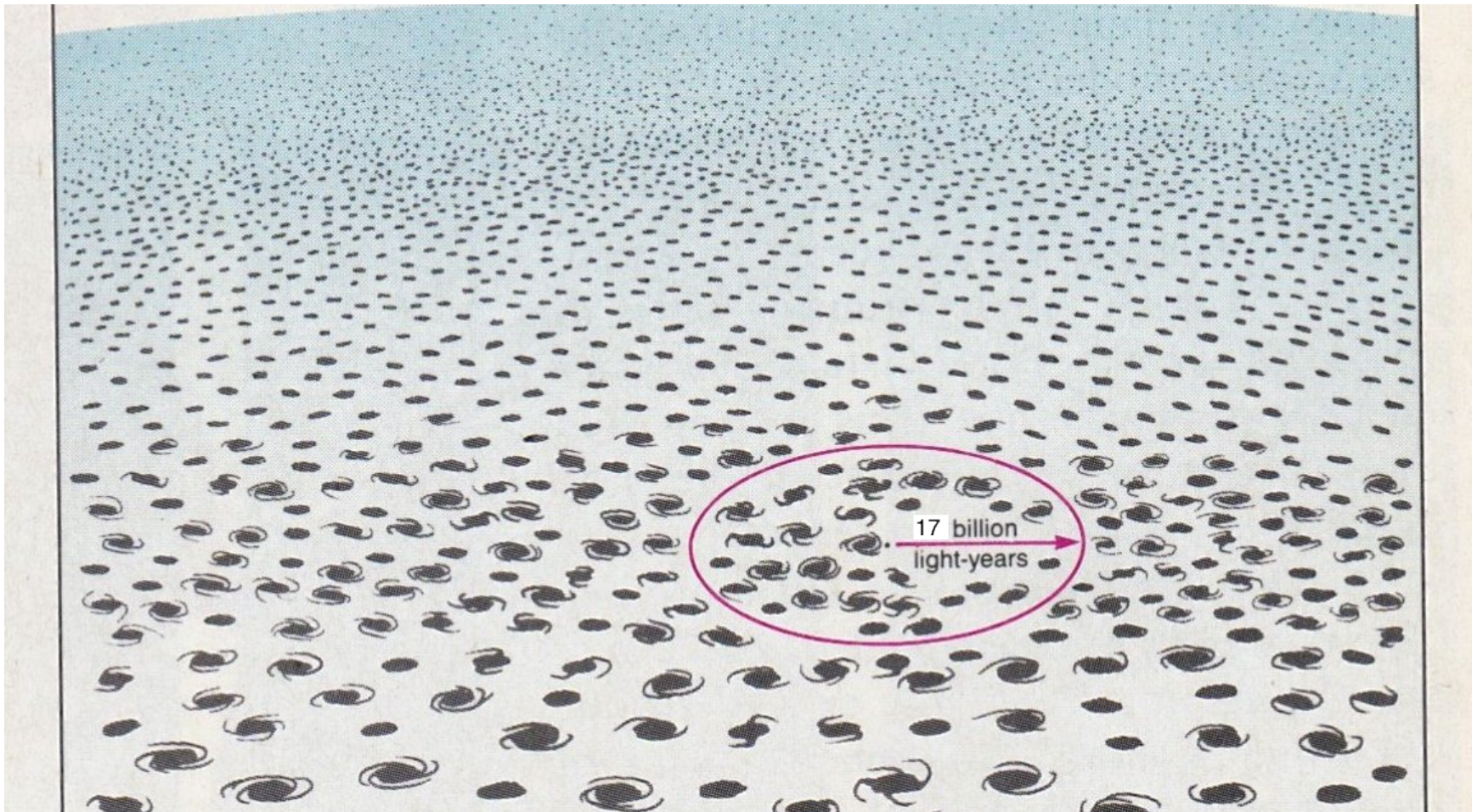
Efni og orka alheims



Þróun fjarlægða í staðallíkaninu



Skynmörk



Óðápensla, mannhorf, landslag
strengjafræðinnar og fjölheimur

Staða mannsins í alheimi



Fiskhorf

Yesterday, somewhere in the multiverse...

Coz otherwise
you wouldn't be here
to ask that question



Mannhorf

Anthropic principle

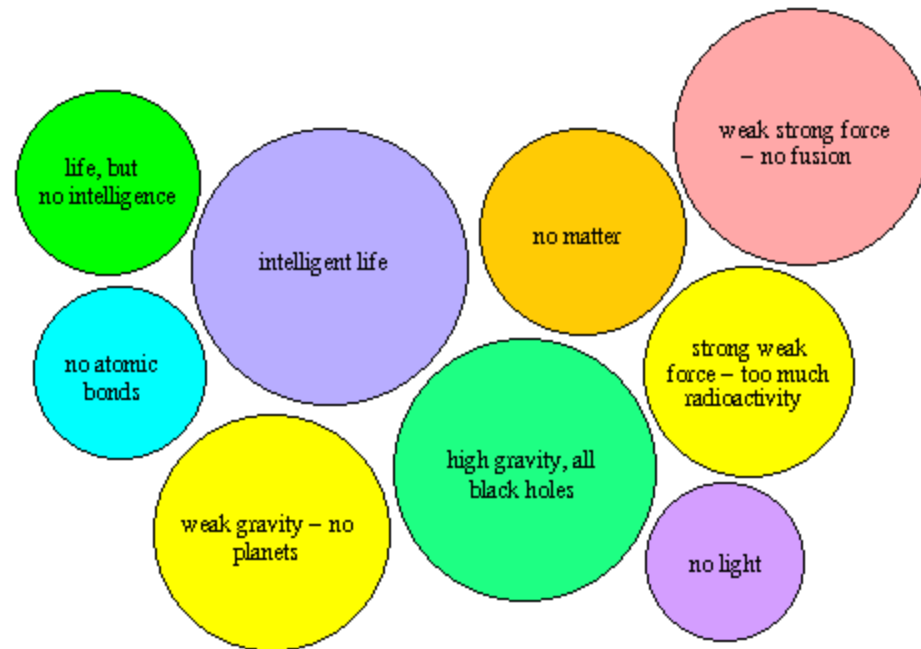
- Comes in two forms:
- **WEAK** – argues that if the world were any different, we would not be here.
- **STRONG** – argues that the world had to be as it is in order for us to be here. There must have been some built in factor which made the development of human life inevitable. This is more similar to the traditional arguments from design.



Mannhorf og óðapensla

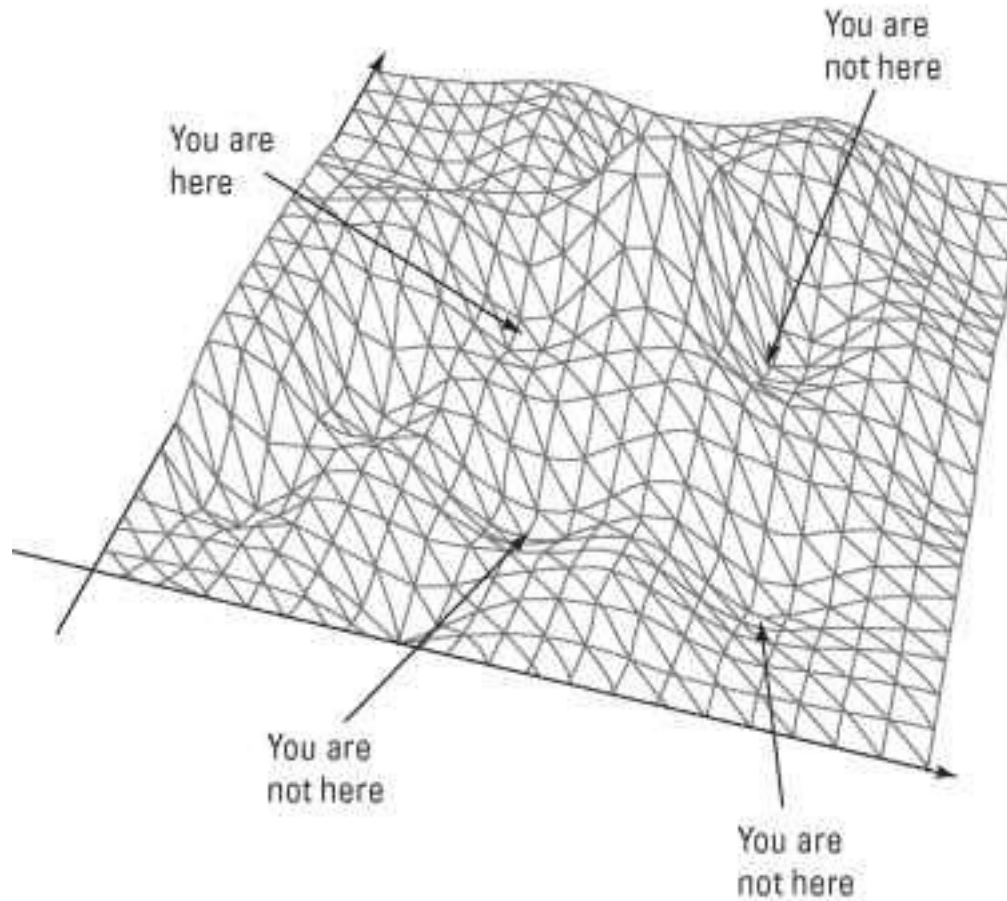
Anthropic Bubbles

one possible solution to the anthropic dilemma is the numerous bubble universes produced by inflation. Each bubble universe may have its own physical constants, which determine the evolution within the bubble

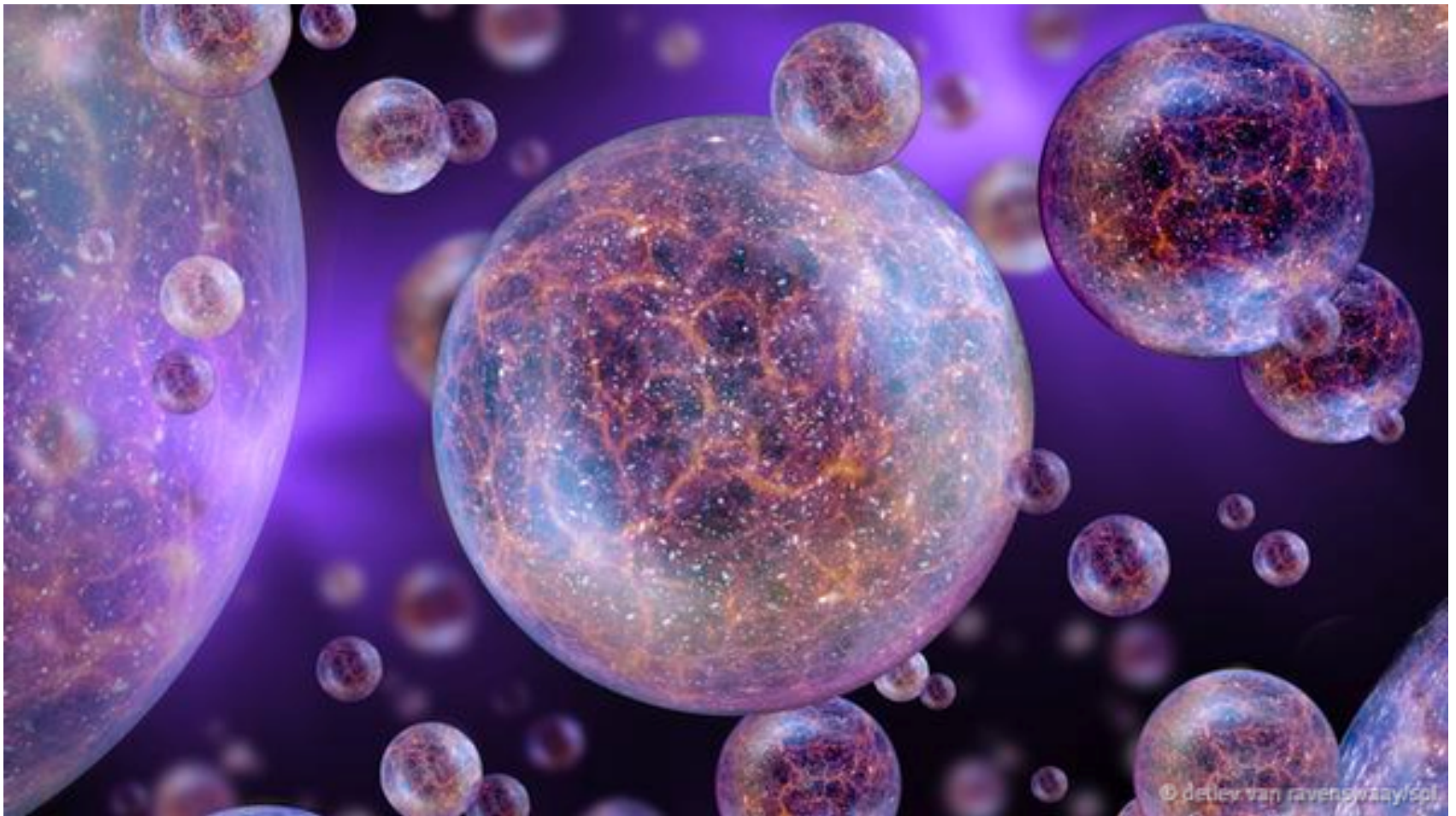


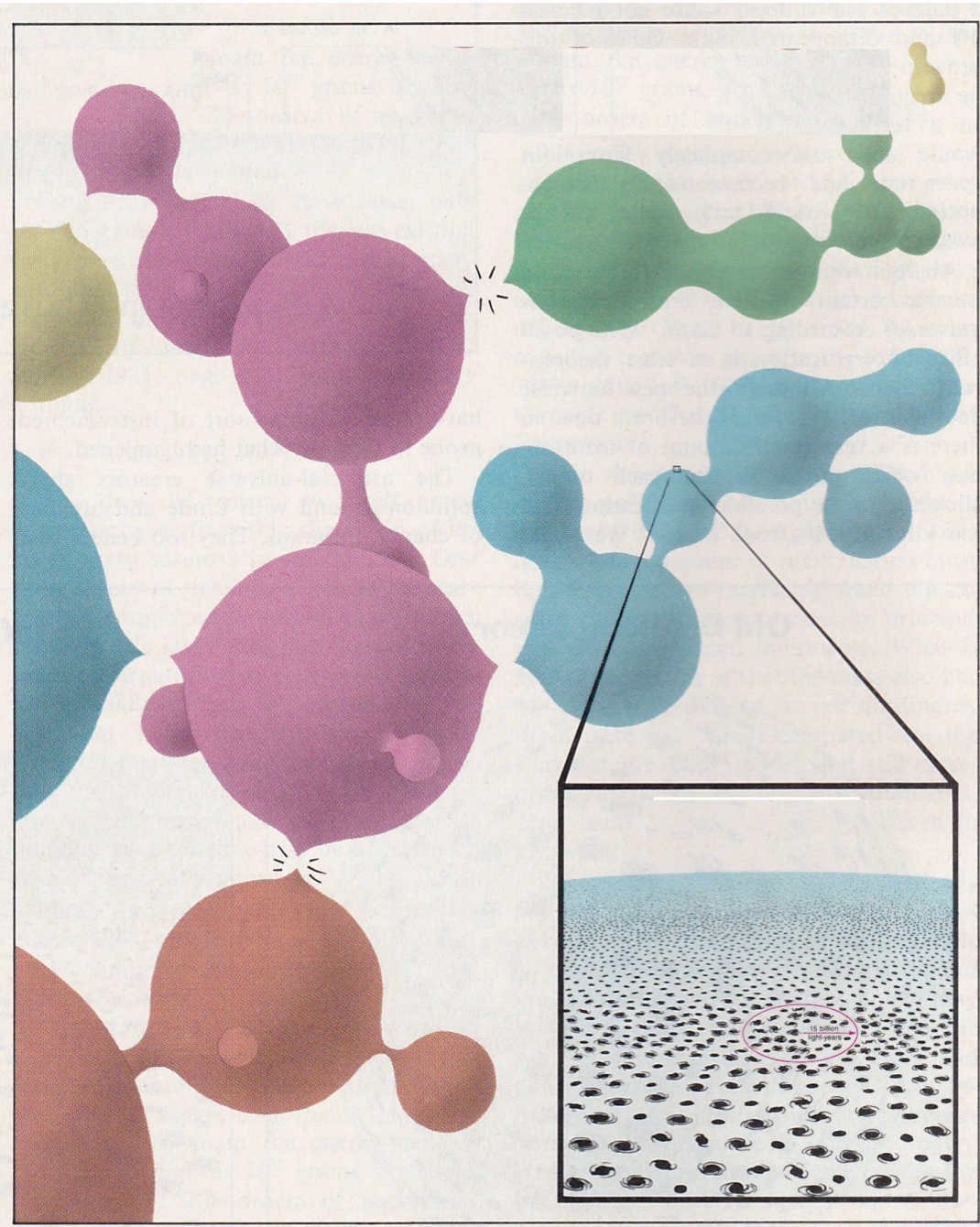
the evolution of intelligent life is extremely sensitive to the initial conditions, but since number of bubble universes is also large, the possibility is finite and our existence is not a big mystery

Landslag strengjafraeðinnar

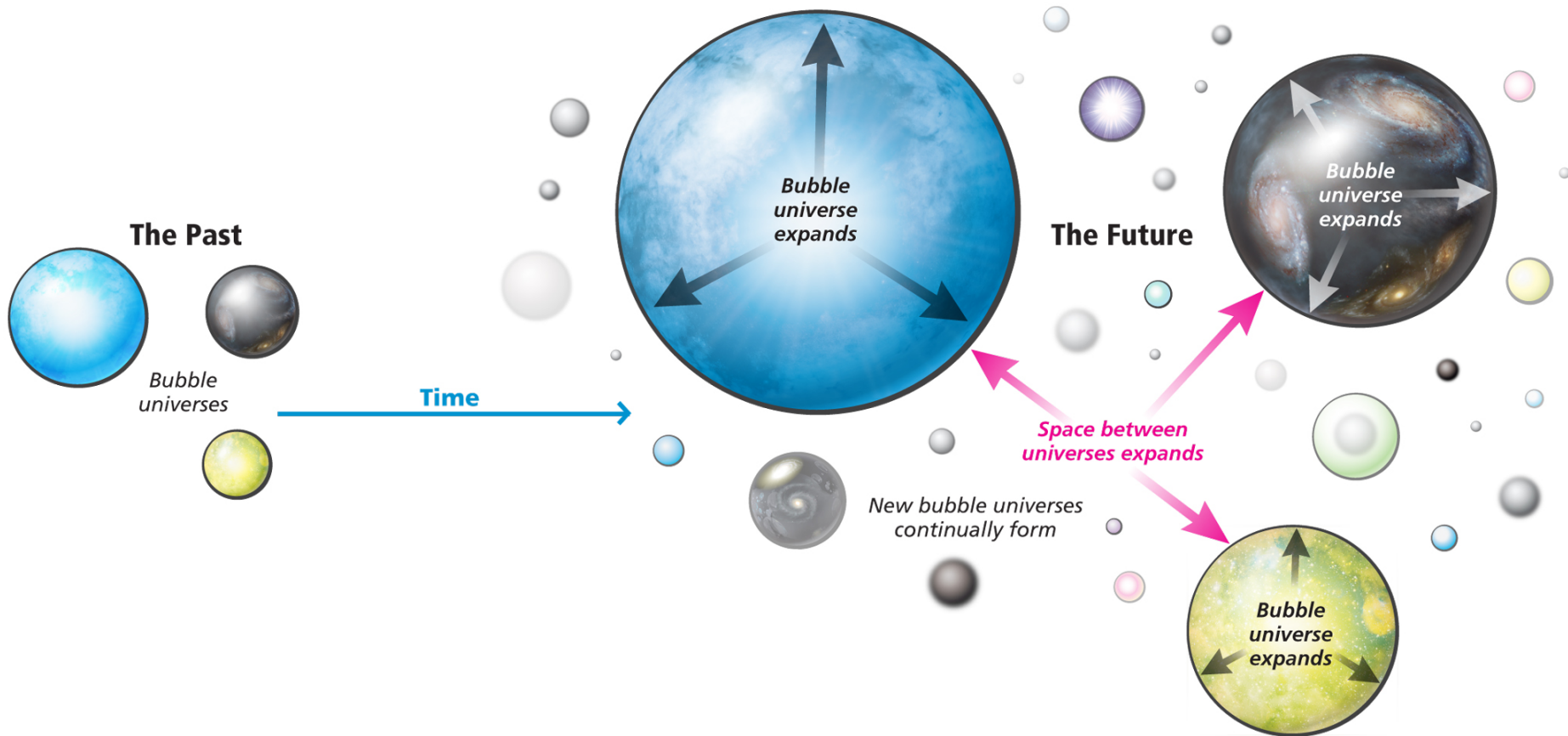


Fjölheimur





Óðáþensla og fjölheimur



Rúm og tími í bóluheimum

