Interpretation and solution of the cosmological constant problem.

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Abstract :
The cosmological constant problem or vacuum catastrophe has long been a mystery of physics. We bring a solution and a simple interpretation.

It is sufficient to calculate the dark energy density parameter $\Omega\Lambda$ at Planck time, origin of our universe :

$$\Omega_{\Lambda,t_p} = \frac{1}{3} \Lambda c^2 t_p^2$$

with $t_H = 1/H$,

where $t_H$ is Hubble time and $H$ is Hubble constant

The vacuum catastrophe $= \Lambda / l_p^{-2} = \Lambda l_p^2$

as

$$l_p = c t_p$$

$$l_p^2 = c^2 t_p^2$$

The vacuum catastrophe $= \Lambda c^2 t_p^2$

The vacuum catastrophe $= 3 \Omega_{\Lambda,t_p}$

Conclusion

The vacuum catastrophe would be the energy density parameter of cosmological constant at Planck time in the $\Lambda$CDM model with a factor of 3 (and with a divisor of 8 pi if we express the problem in $J/m^3$), and it would no longer be a problem.