

Primordial Dirac Leptogenesis

Juan Pablo Garcés

with A. Ahmed and M. Lindner

(arXiv: 2511.03794)

Max-Planck-Institut für Kernphysik

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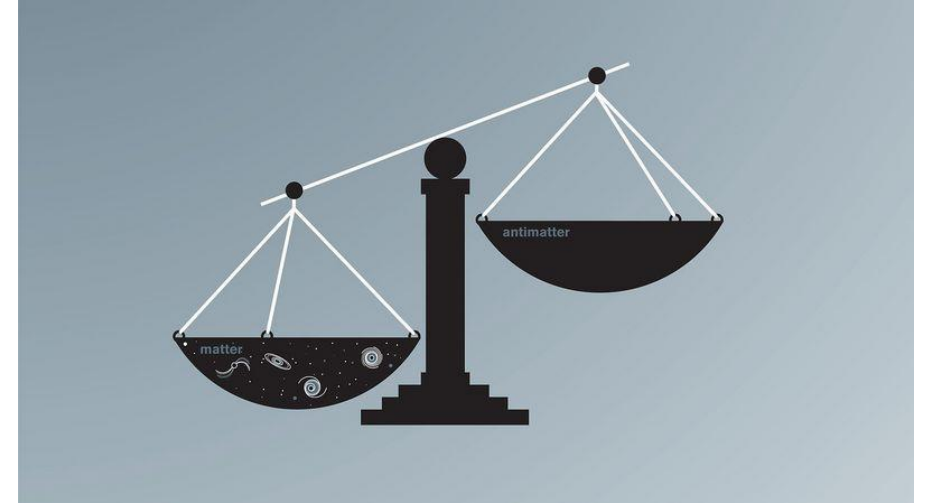
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Limitations of the SM and the Λ CDM

- BBN and CMB measurements

$$\eta_B = \frac{n_B - n_{\bar{B}}}{n_\gamma} \approx 6.1 \times 10^{-10}$$

[arXiv:1710.11129, 1807.06209]



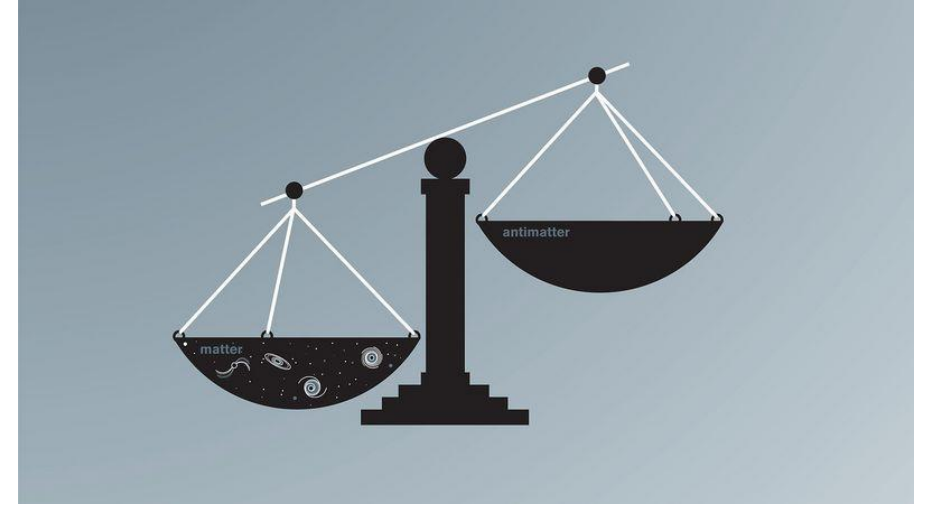
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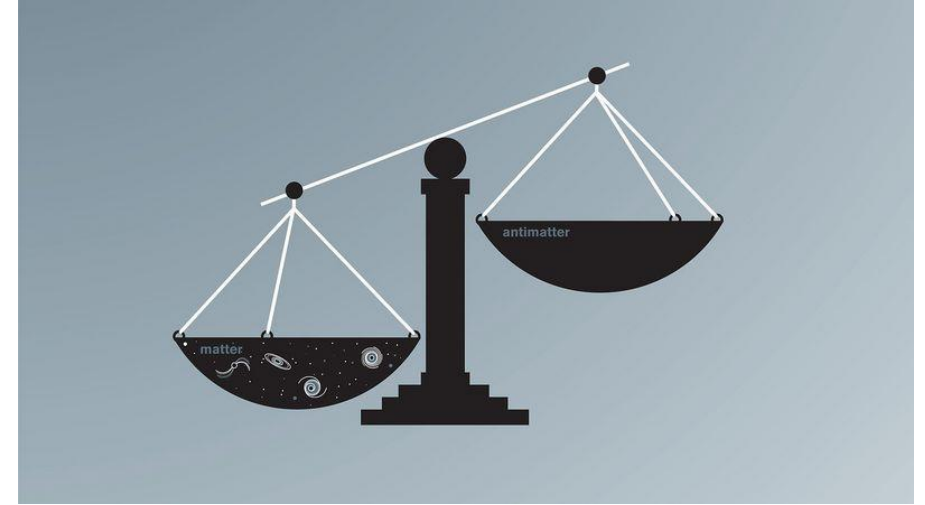
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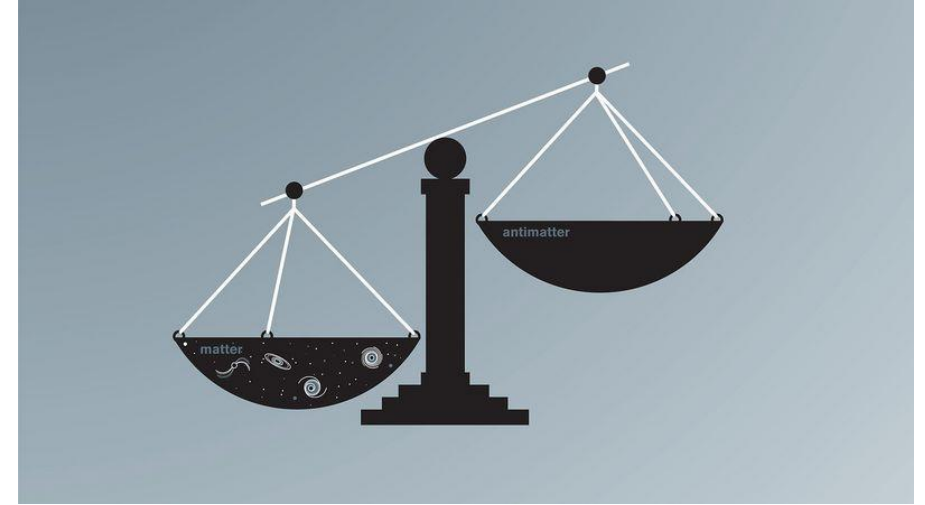
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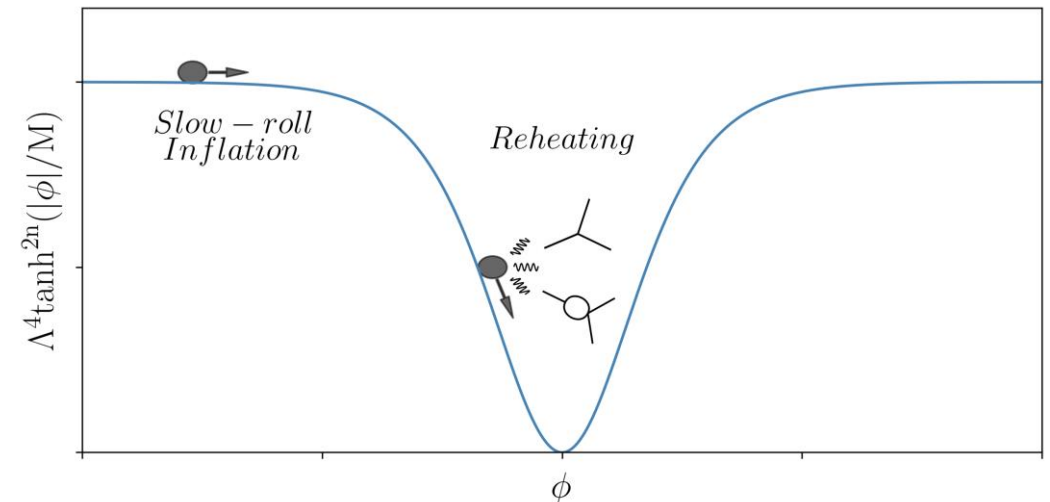
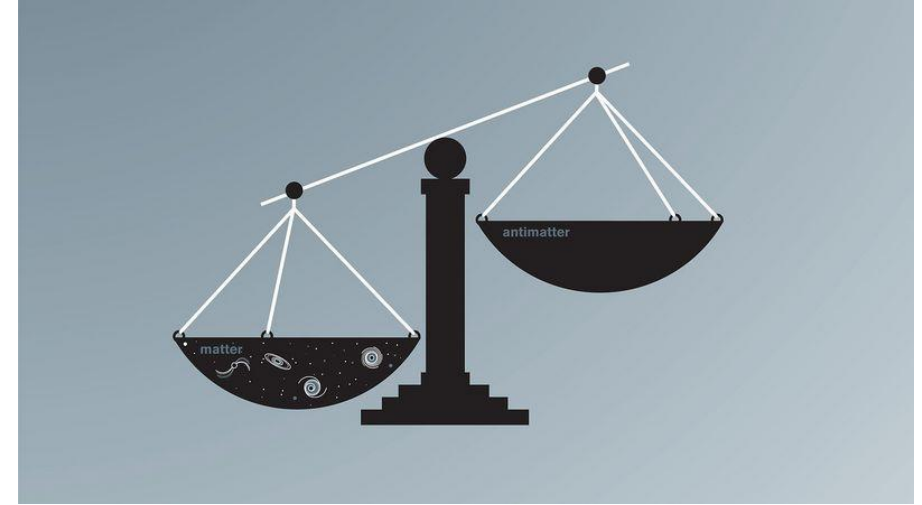
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Motivates early period of inflation!

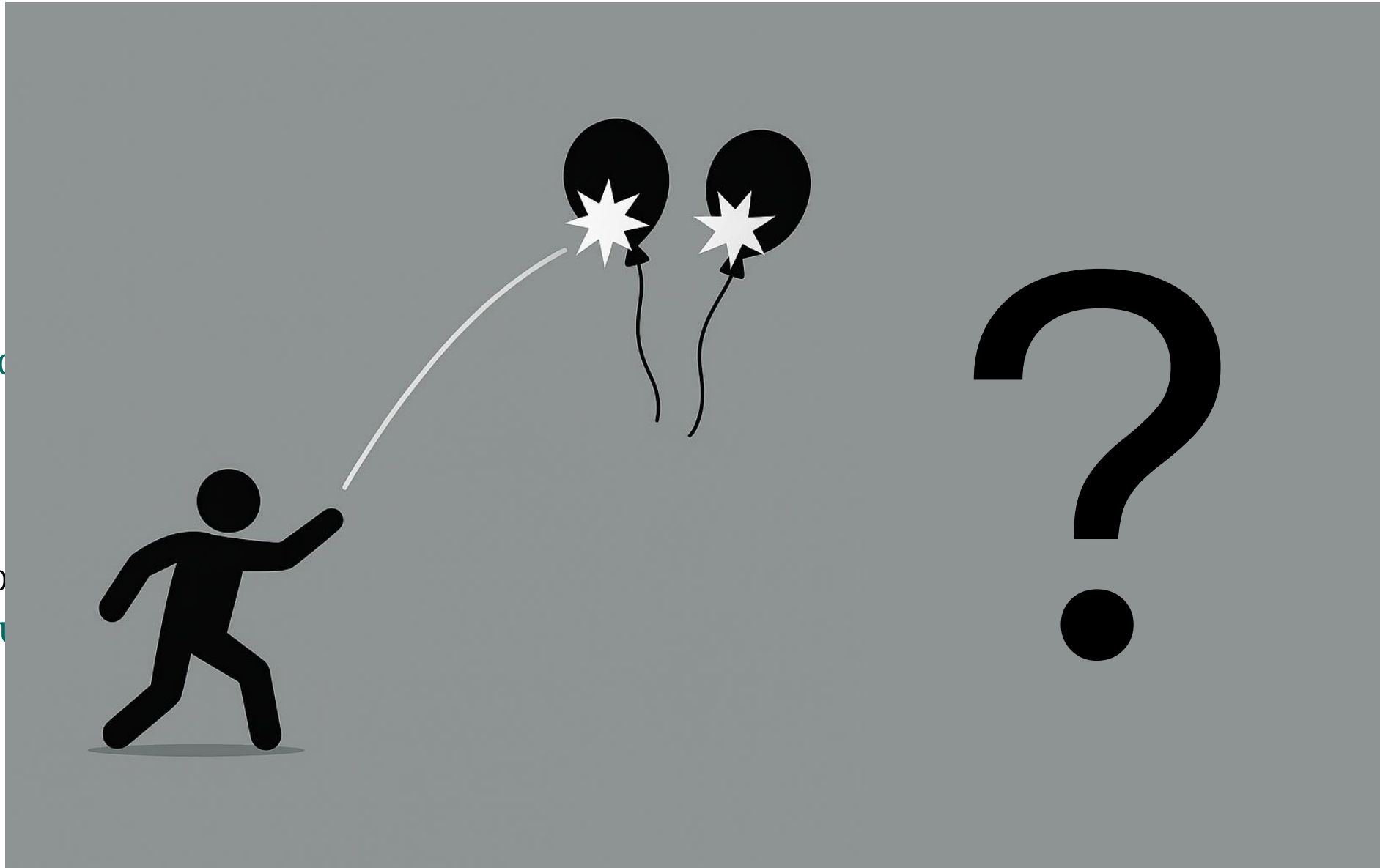


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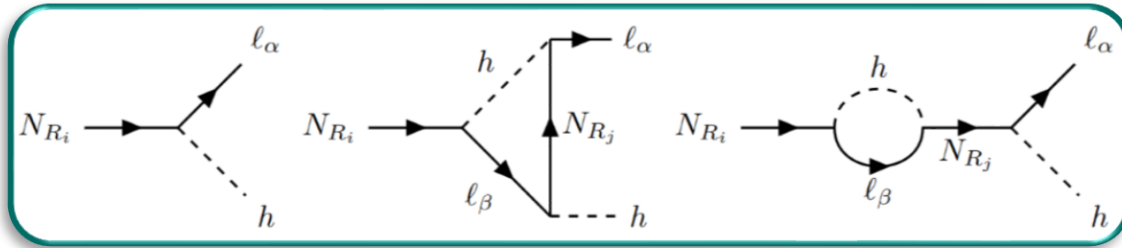
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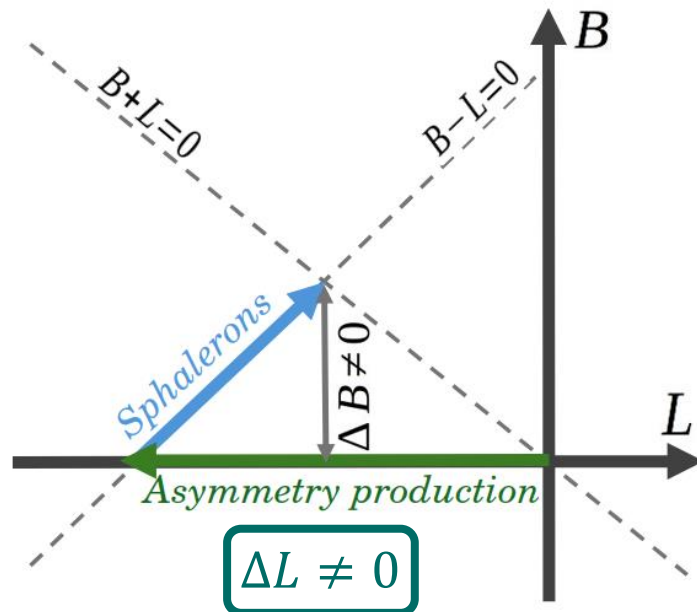


Leptogenesis mechanisms

Majorana

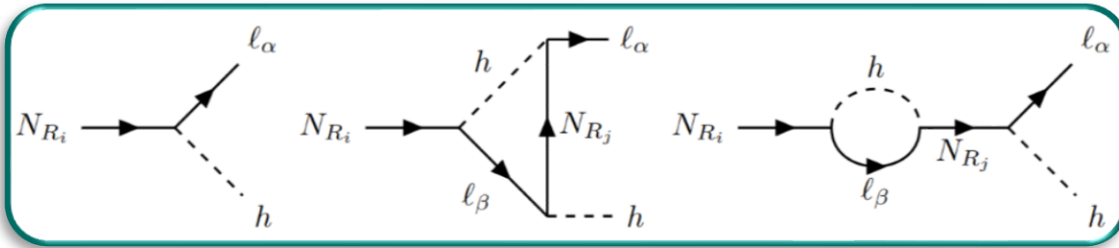


[M. Fukugita and T. Yanagida, Phys. Lett. B 174 (1986) 45–47]



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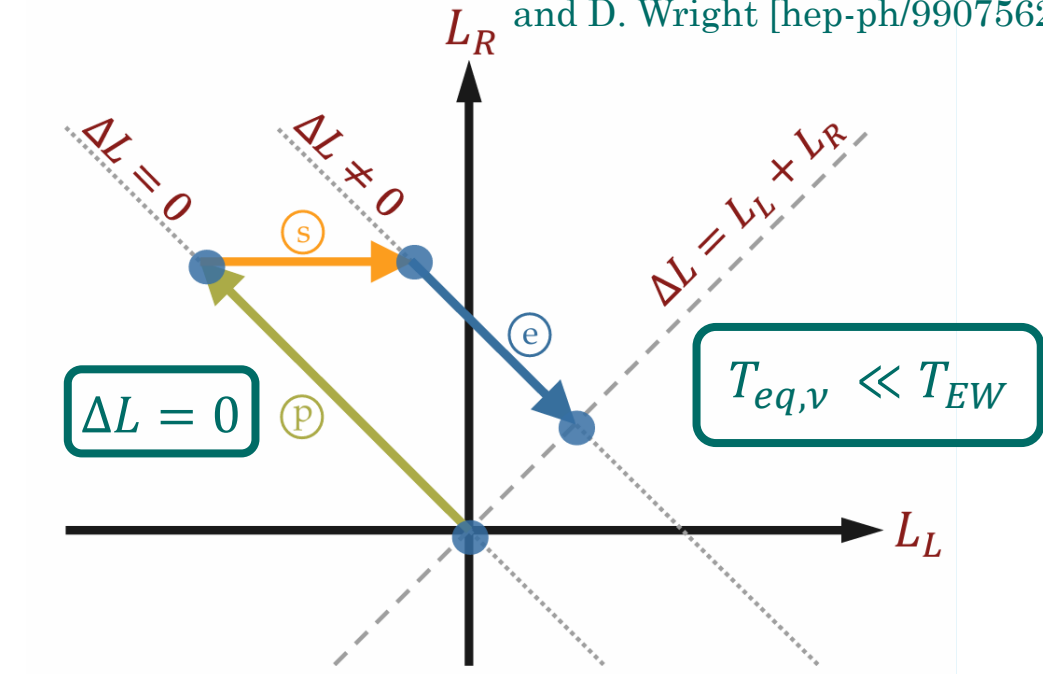
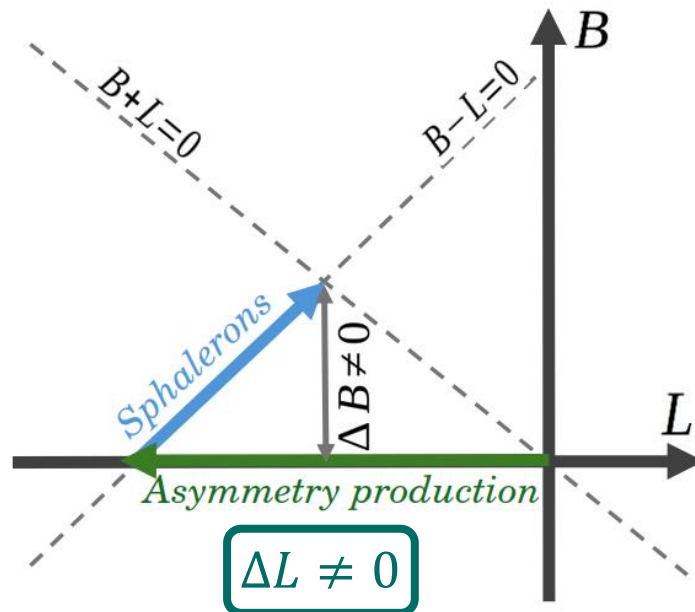


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Dirac

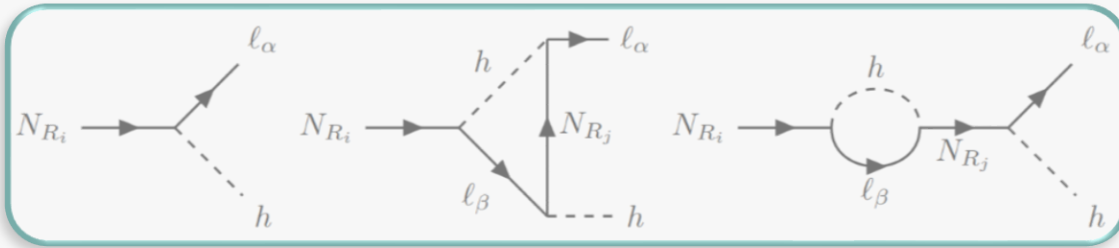


[K. Dick, M. Lindner, M. Ratz, and D. Wright [hep-ph/9907562]

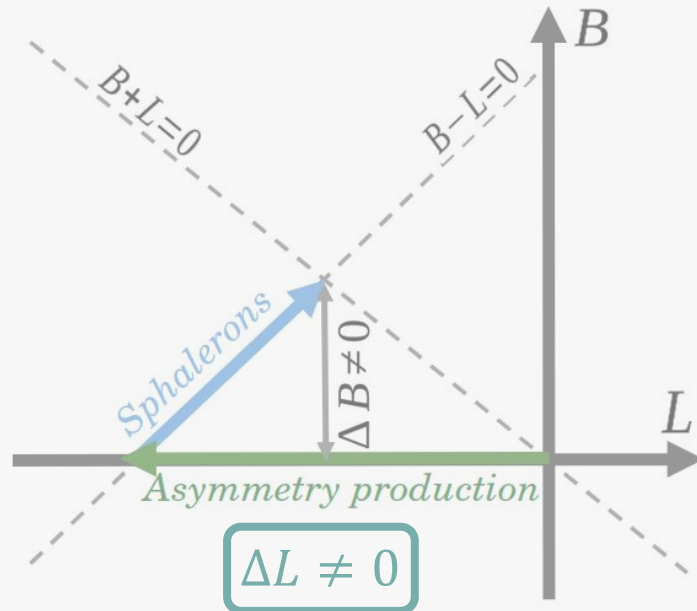


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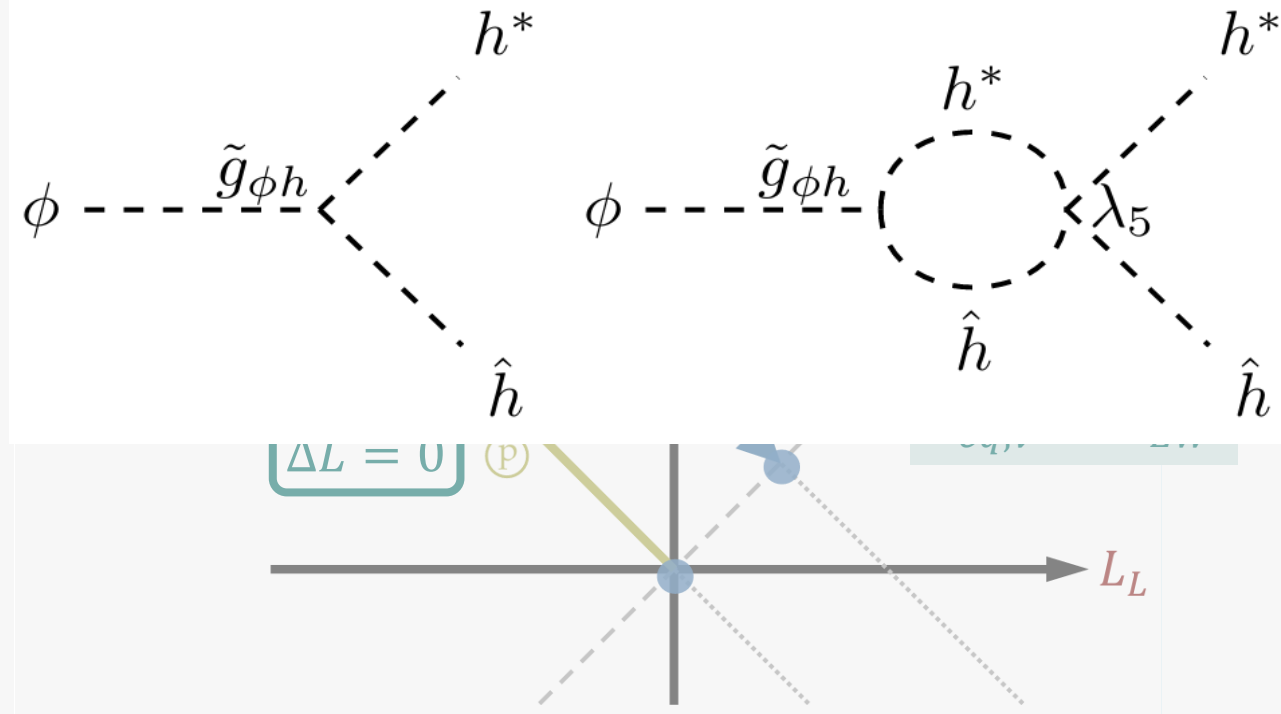


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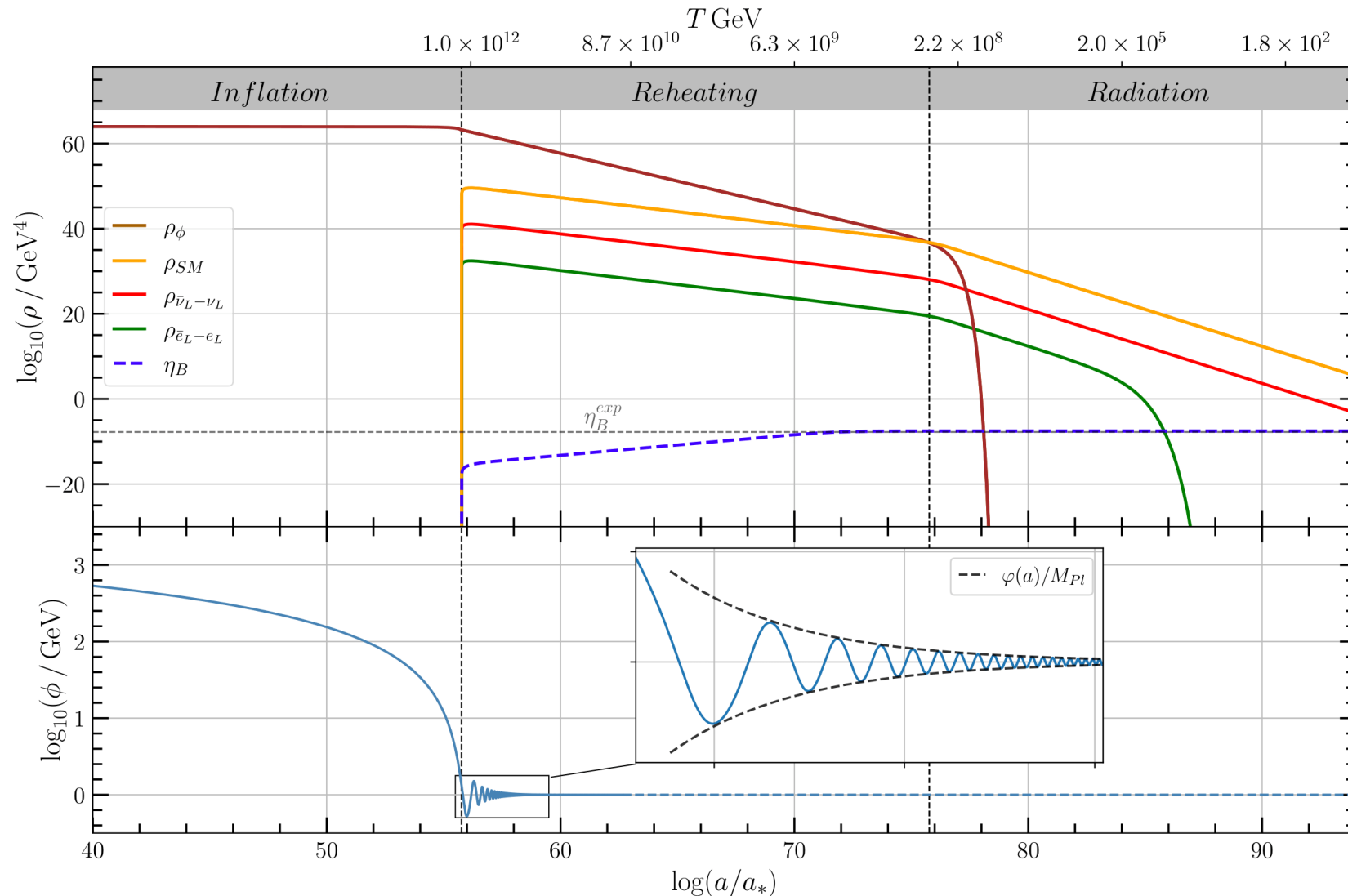


Primordial Dirac Leptogenesis

CP-violating inflaton decays



Cosmological evolution



1. Scalar-sector asymmetry **production**
 - CP-violating and out-of-equilibrium inflaton decays
2. Asymmetry **sequestering**
 - Neutrino Yukawas
3. Lepton asymmetry **to BAU**
 - Weak sphalerons

