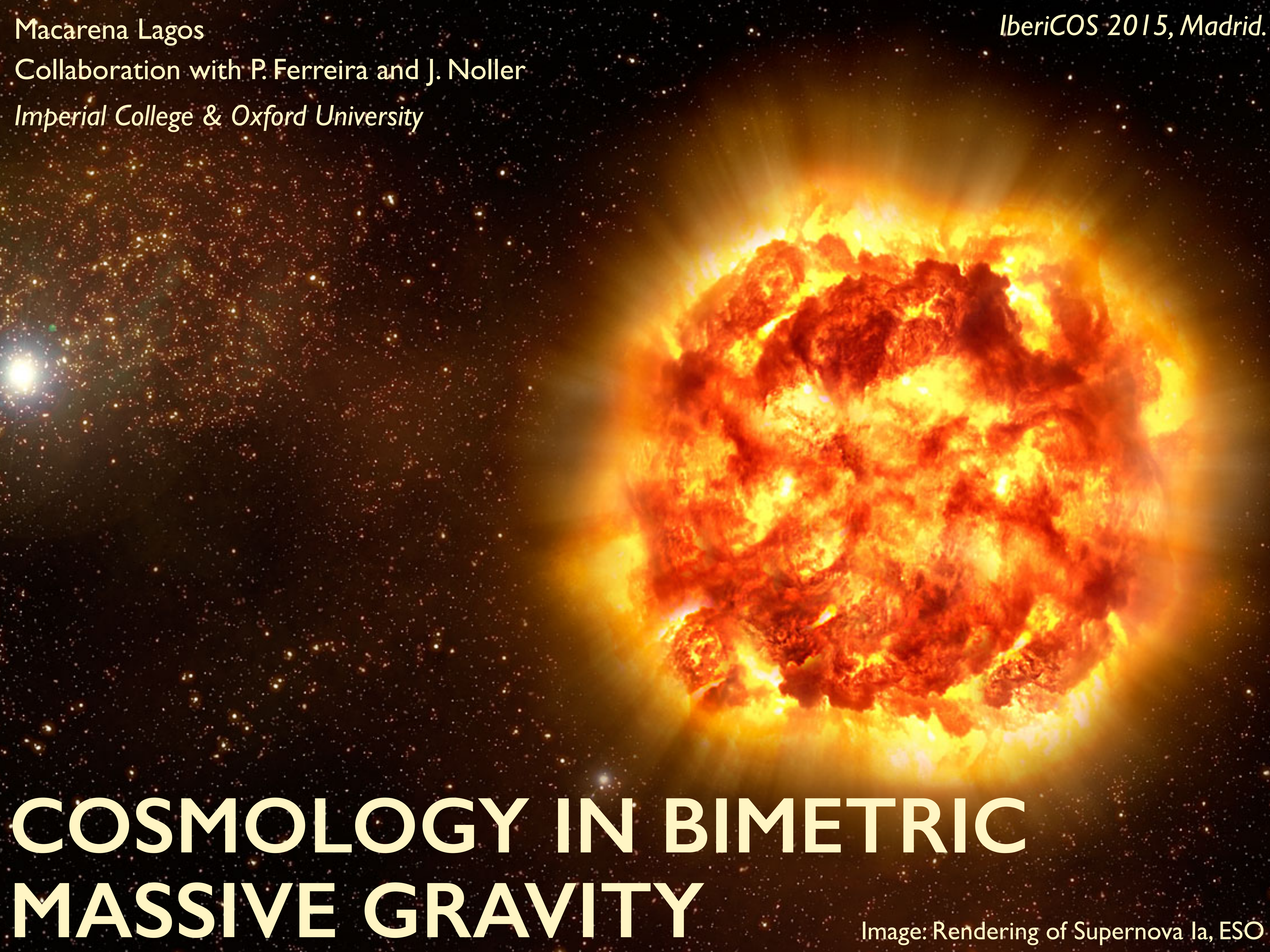
Macarena Lagos
Collaboration with P. Ferreira and J. Noller
Imperial College & Oxford University

IberiCOS 2015, Madrid.



COSMOLOGY IN BIMETRIC MASSIVE GRAVITY

Image: Rendering of Supernova Ia, ESO

BIMETRIC MASSIVE GRAVITY

$$S = \frac{M_g^2}{2}\int d^4x\sqrt{-g}R_g + \frac{M_f^2}{2}\int d^4x\sqrt{-f}R_f - m^4\int d^4x\sqrt{-g}\sum_{n=0}^{4}\beta_n e_n\left(\sqrt{g^{-1}f}\right)$$

Ref: Hassan et. al. 2011
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$$e_0 = 1;\ e_1 = [\mathbb{X}];\ e_2 = \frac{1}{2}([\mathbb{X}]^2 - [\mathbb{X}^2])$$

$$e_3 = \frac{1}{6}([\mathbb{X}]^3 - 3[\mathbb{X}][\mathbb{X}^2] + 2[\mathbb{X}^3]);\ e_4 = \det(\mathbb{X})$$

SIMPLY COUPLED

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Adding matter:

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- Flat FRW universe

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Space-time

COSMOLOGY

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Expanding **Bouncing**

BRANCH 2 PERTURBATIONS

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Expanding branch

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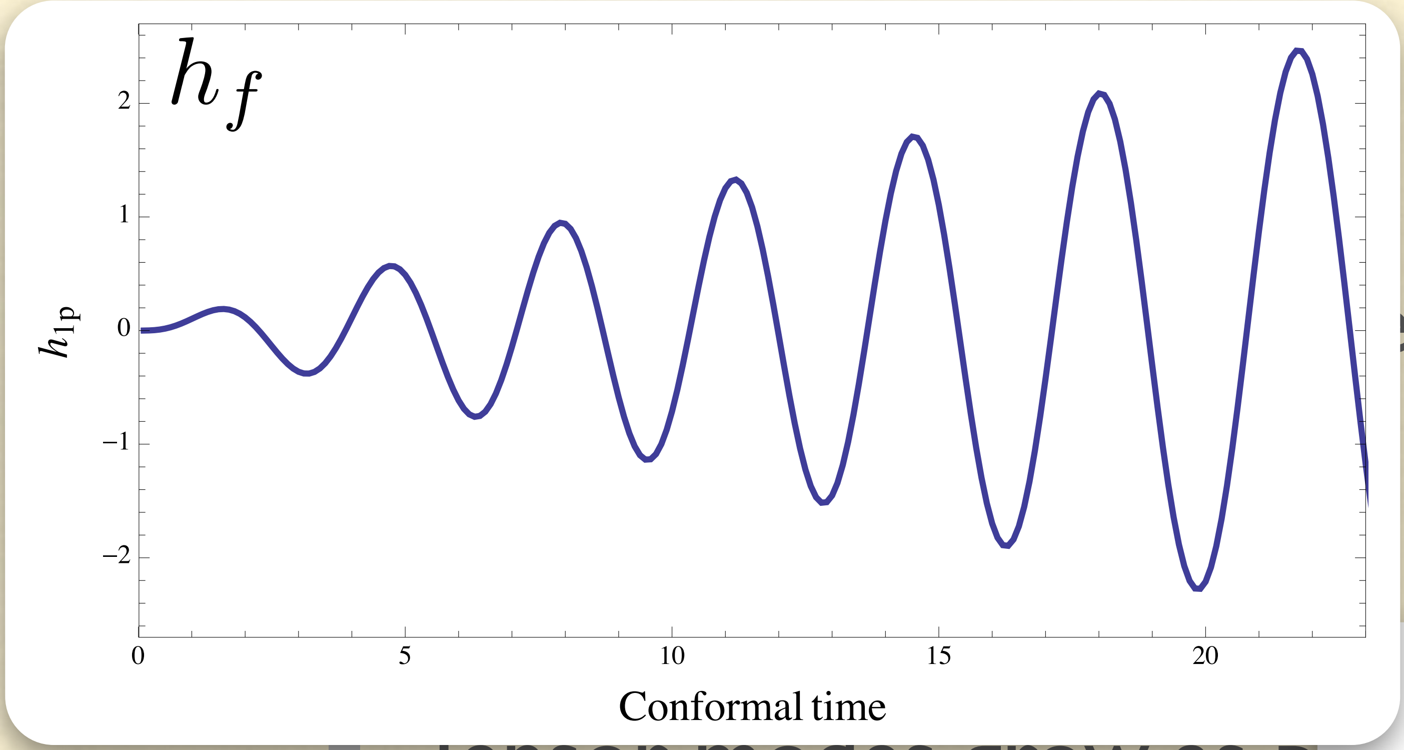
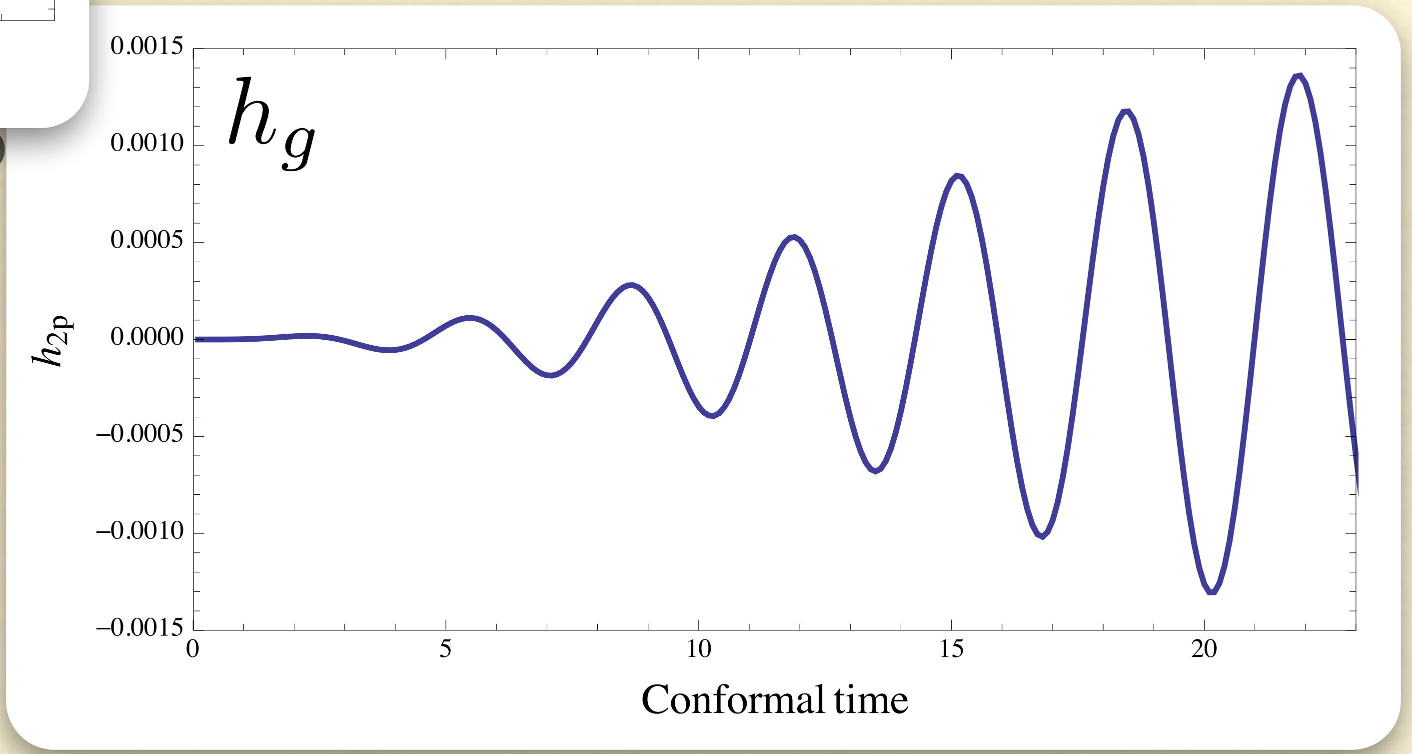


- Tensor modes grow as p…



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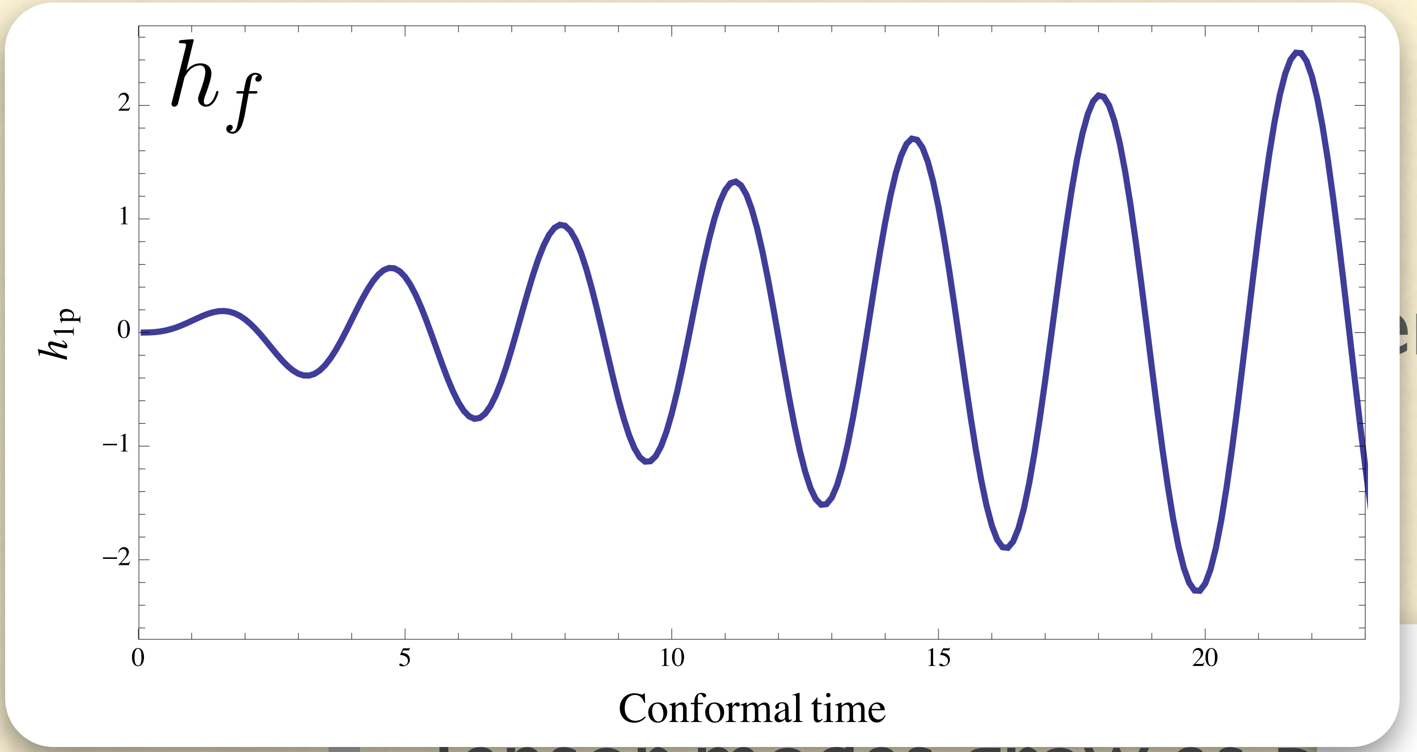

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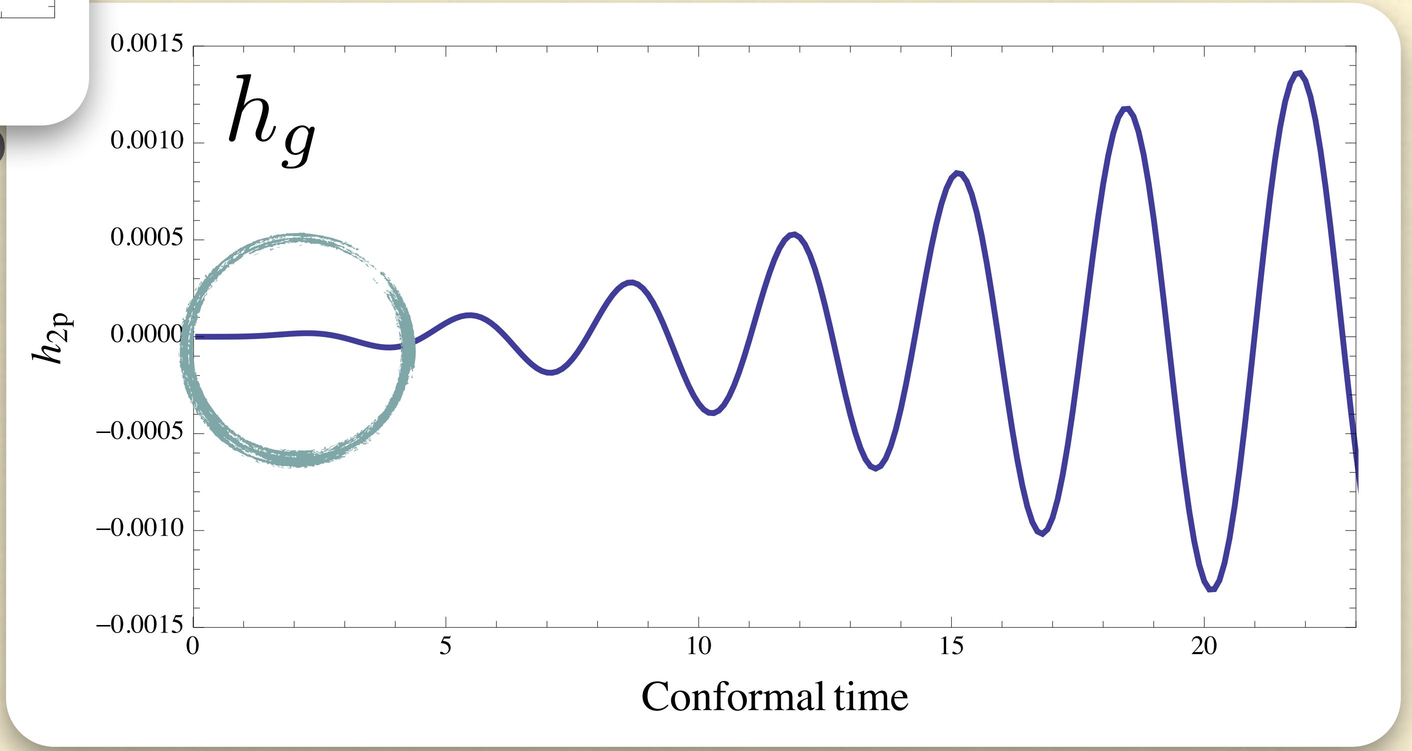

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- Fine tuning should be necessary from a previous inflationary period

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Thanks for you attention!