

Fast likelihood-free inference in the LSS Stage-IV era

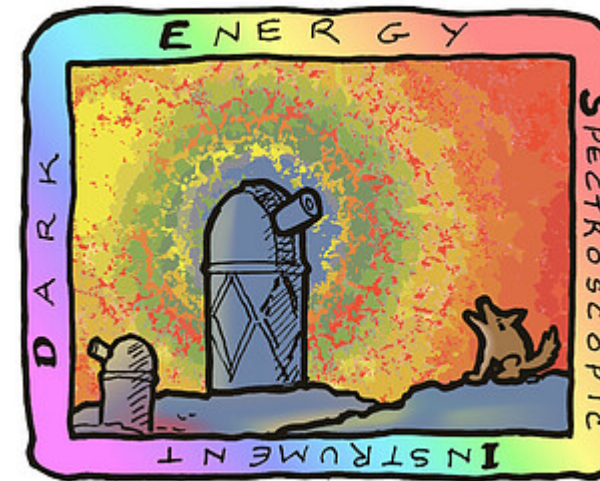
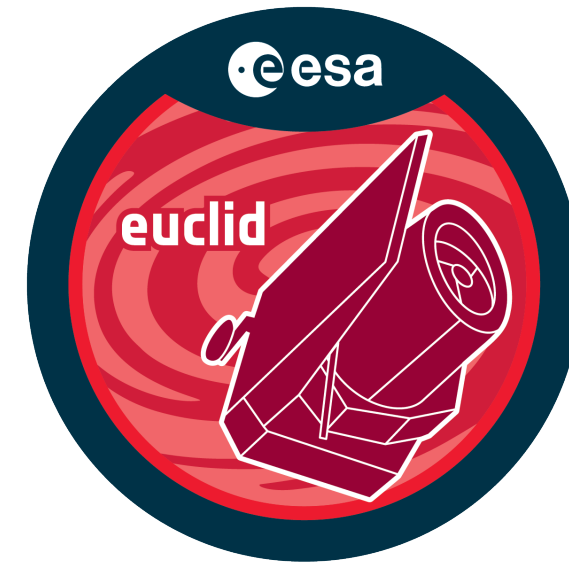
Guillermo Franco Abellán



Based on [arXiv:2403.14750](https://arxiv.org/abs/2403.14750)
with Guadalupe Cañas-Herrera,
Matteo Martinelli,
Oleg Savchenko,
Davide Sciotti,
& Christoph Weniger

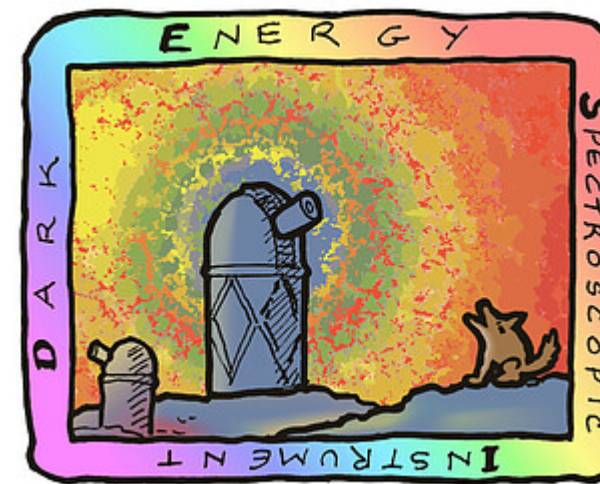
EuCAIFCon - 30th April 2024

Forthcoming **cosmological surveys** will provide us with unprecedented data to probe the **dark sector**...



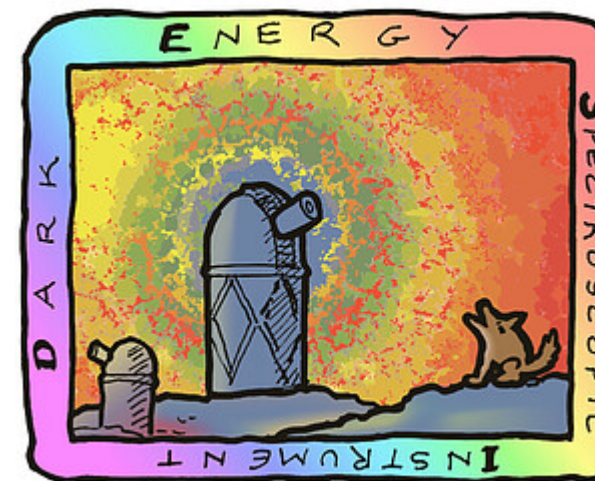
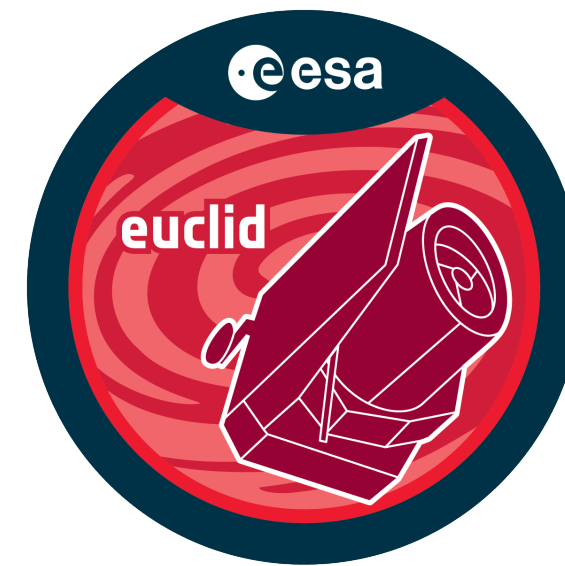
Forthcoming **cosmological surveys** will provide us with unprecedented data to probe the **dark sector**...

...but analysing these data will be **challenging** with classical methods



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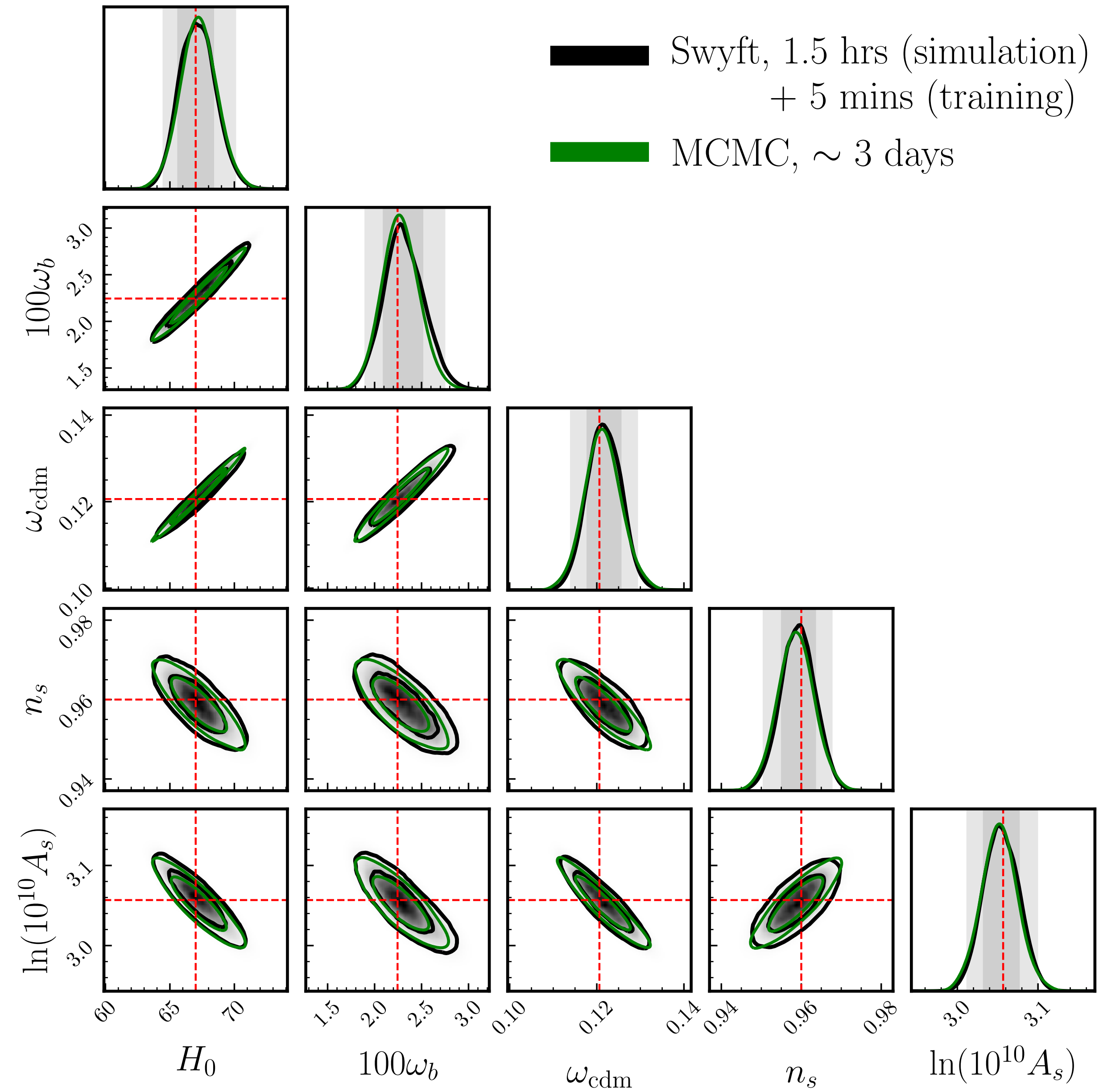


Our **GOAL**

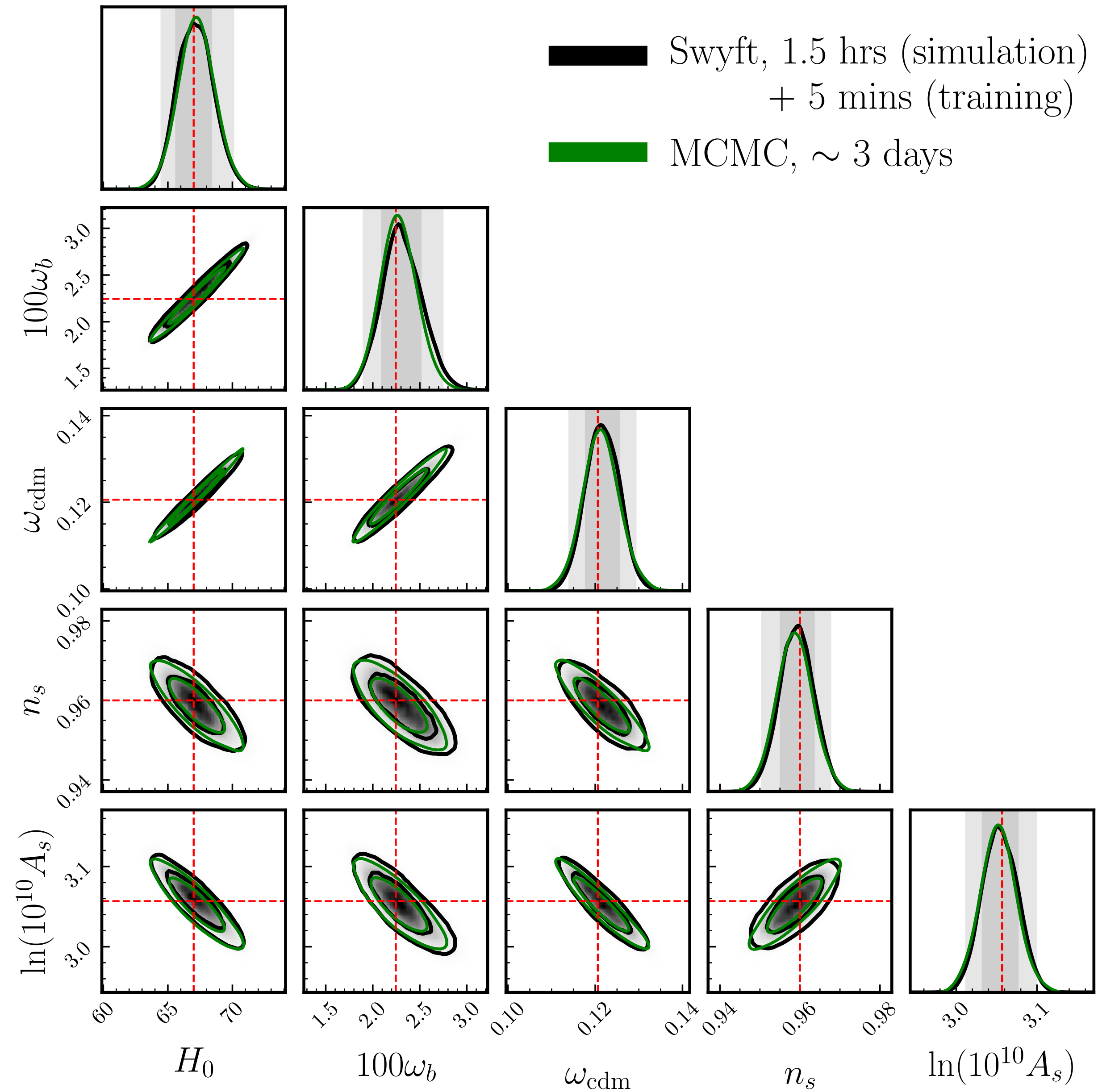
Accelerate parameter inference from Stage-IV photometric surveys (i.e. **Euclid**) using **Marginal Neural Ratio Estimation*** (MNRE, a new approach in **SBI**)

*Implemented in **Swyft** [Miller+ 20]

Forecast Λ CDM posteriors

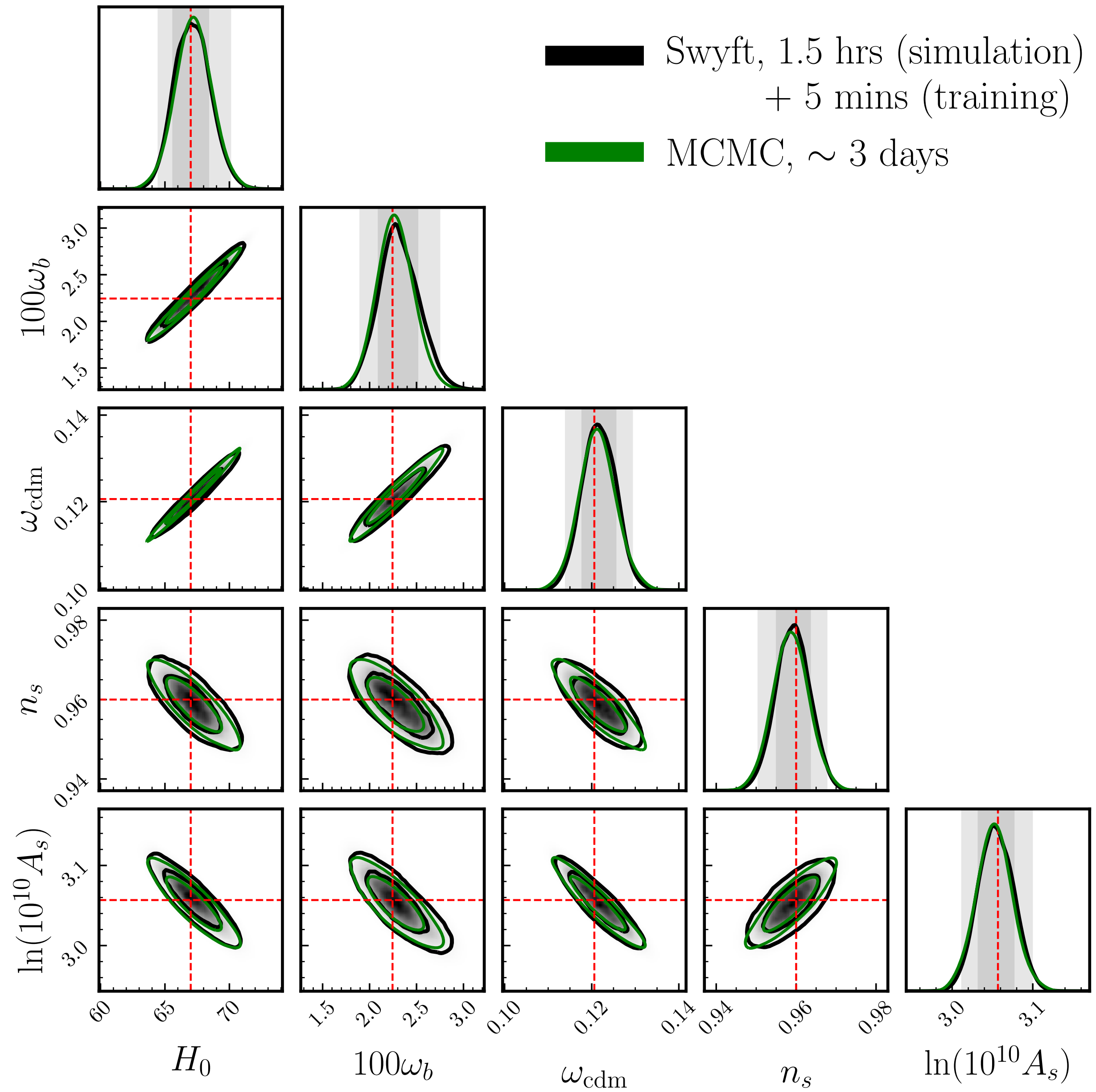


Forecast Λ CDM posteriors



MNRE & MCMC are in excellent agreement!

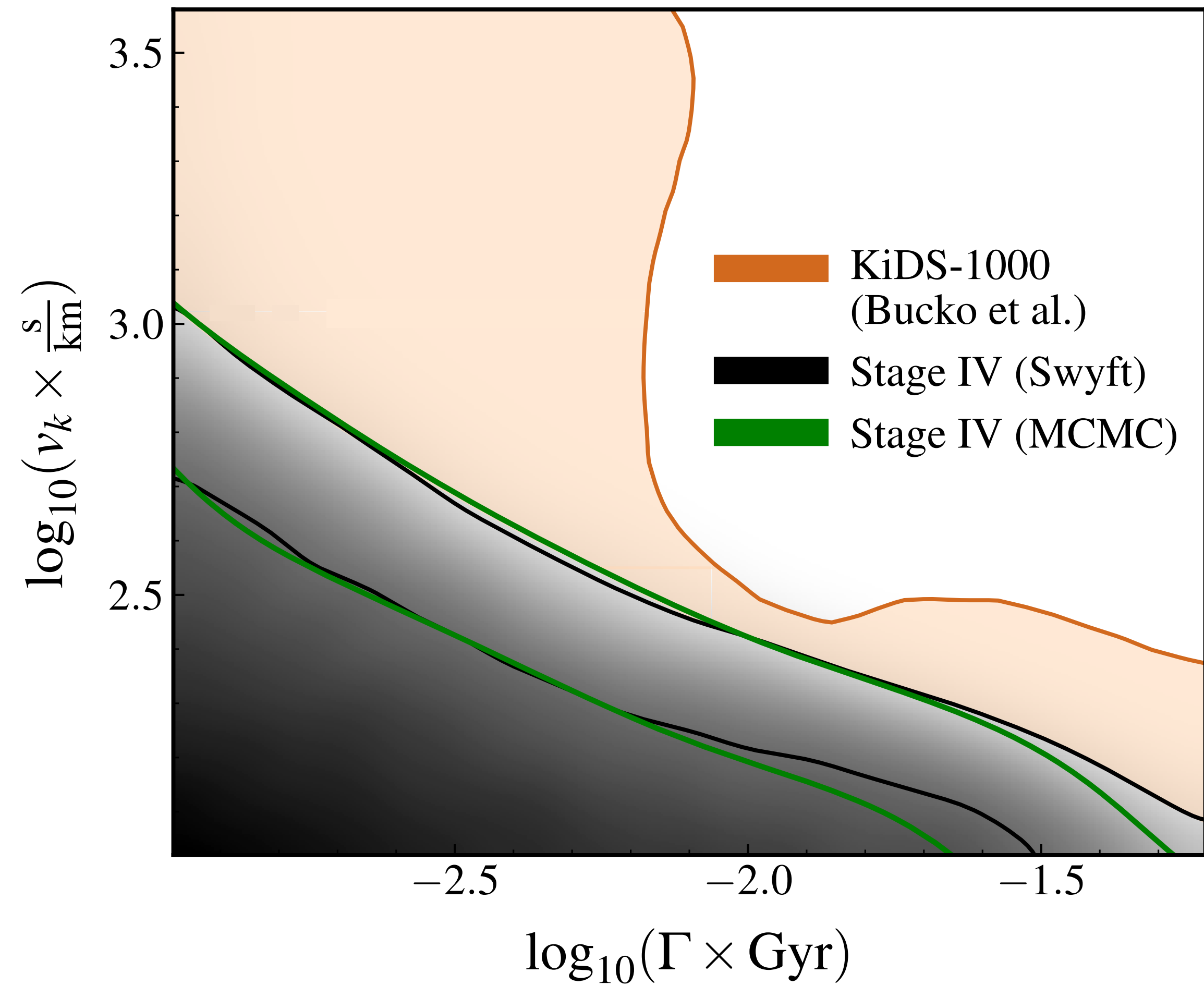
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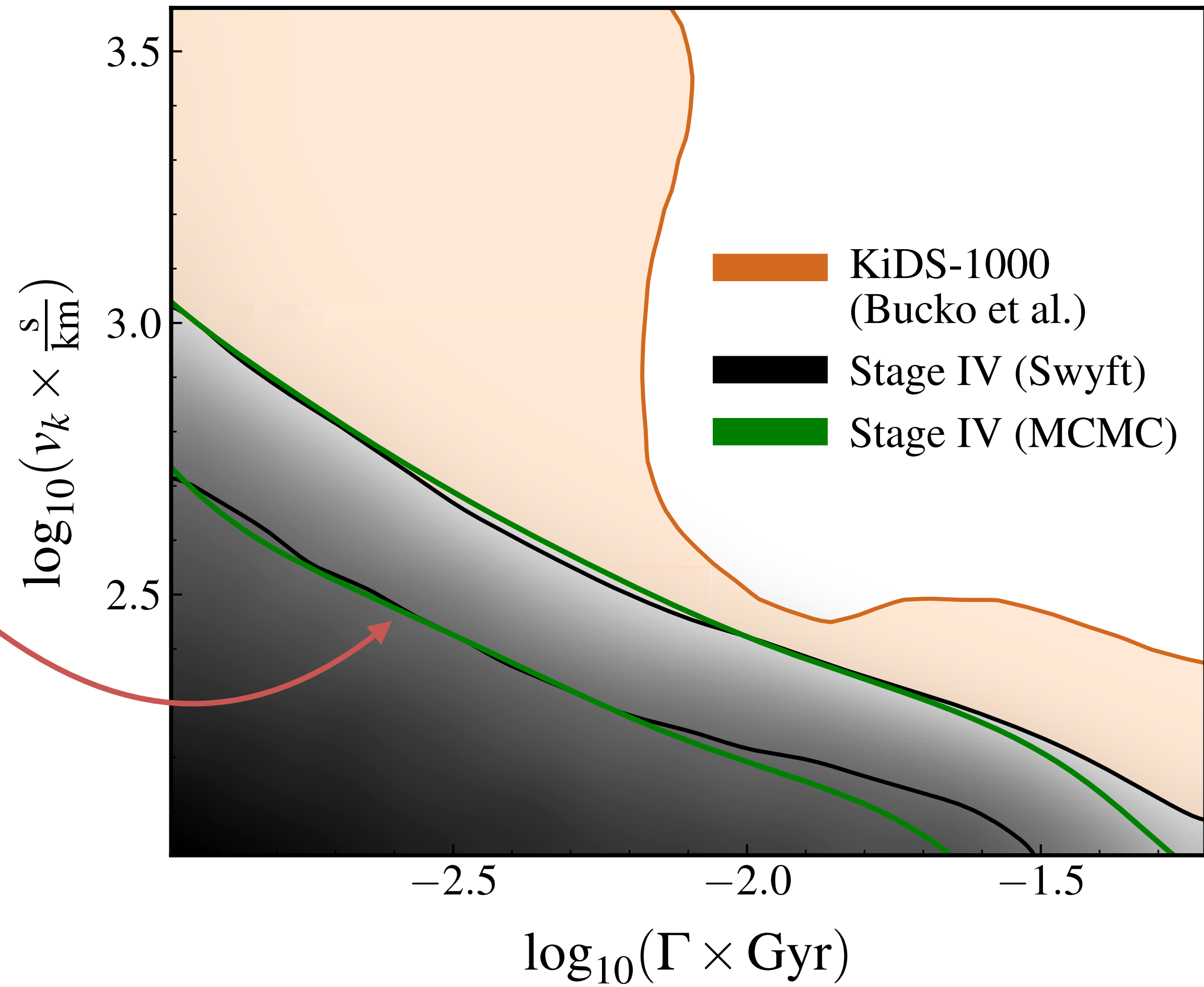
Dramatic reduction in CPU time!

Forecast constraints on decaying DM



Forecast constraints on decaying DM

MNRE & MCMC in good agreement



Forecast constraints on decaying DM

