SIMULATION-BASED INFERENCE FROM THE CD-EoR 21-CM SIGNAL

Anchal Saxena, Alex Cole, Simon Gazagnes, Daan Meerburg, Christoph Weniger, Samuel Witte
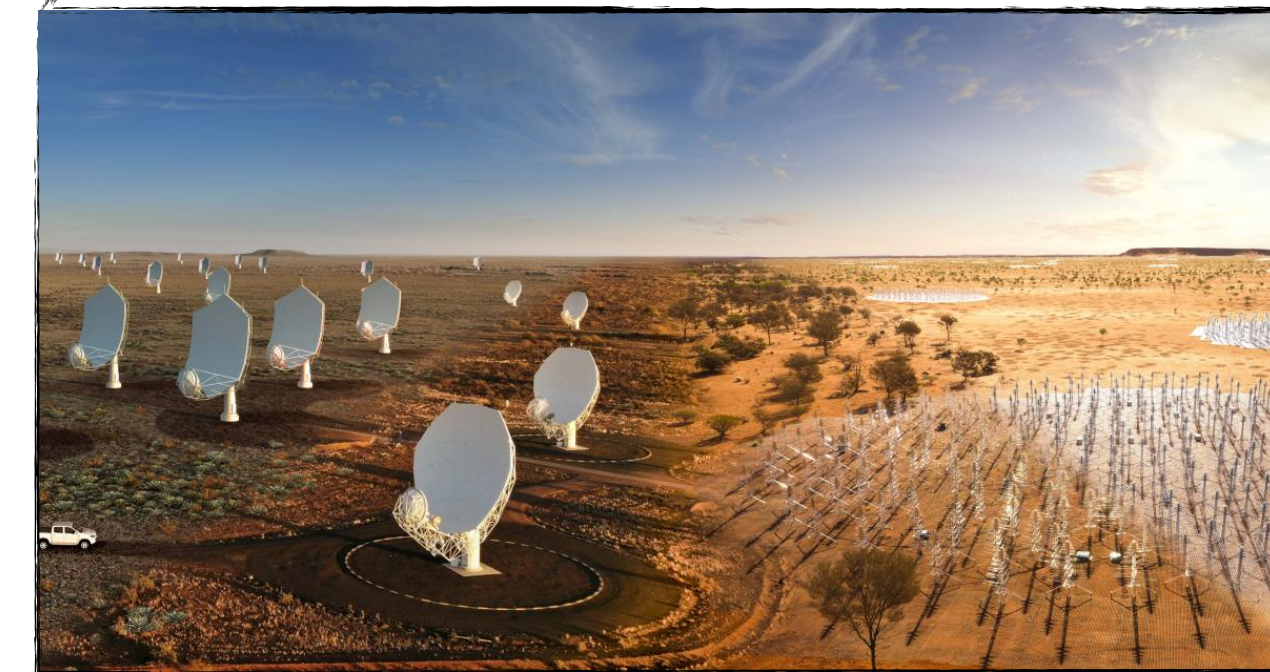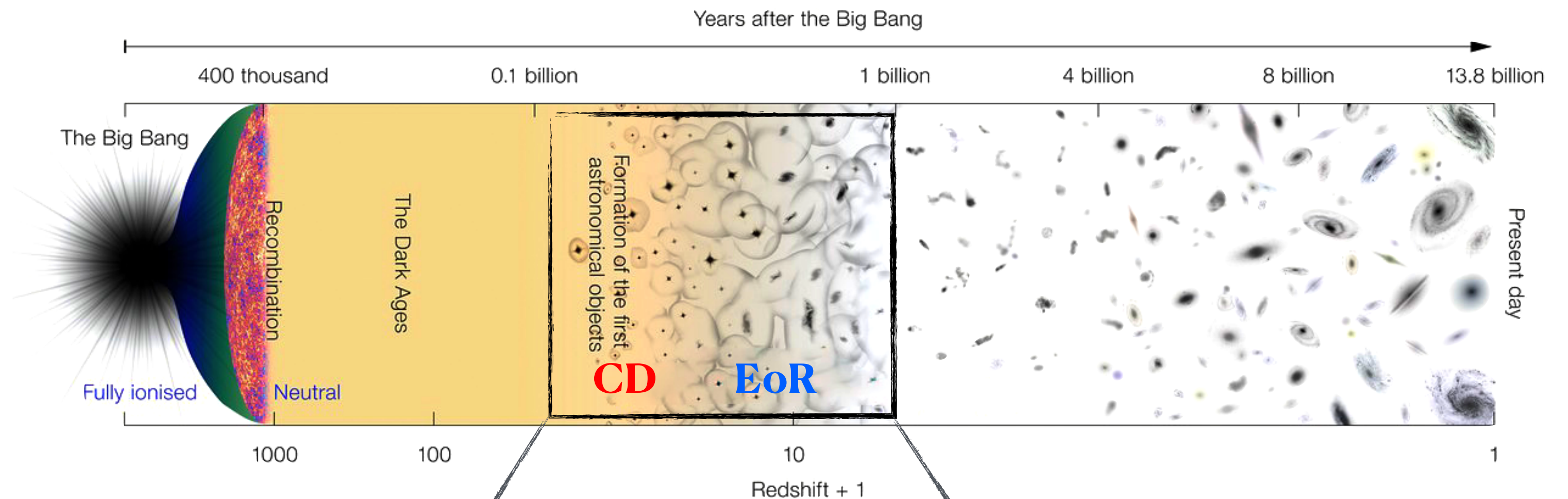
GOALS

- ❖ Constrain the astrophysics of the early Universe with 21-cm line
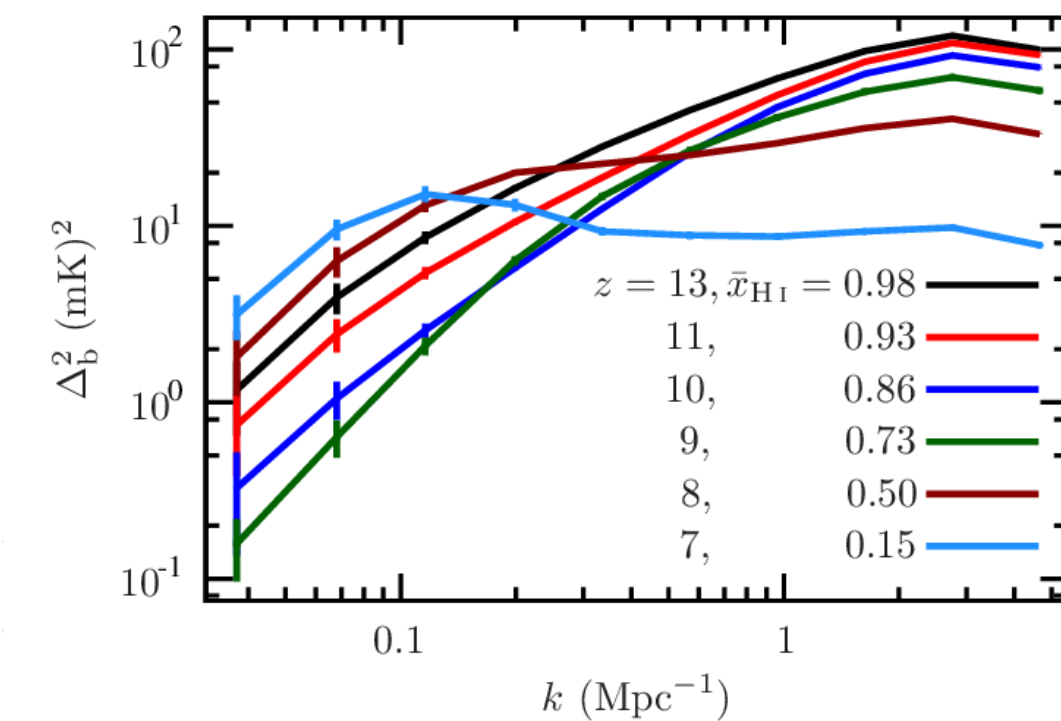- ❖ Solving the inverse problem!

CHALLENGES

- ❖ Scalability of the conventional methods to high dimensional parameter spaces
- ❖ Expensive forward models
- ❖ Likelihood of the 21-cm power spectrum?

SOLUTION

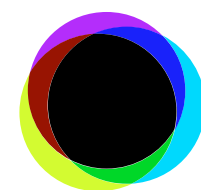- ❖ Simulation-Based Inference through Marginal Neural Ratio Estimation

Square Kilometer Array

university of groningen

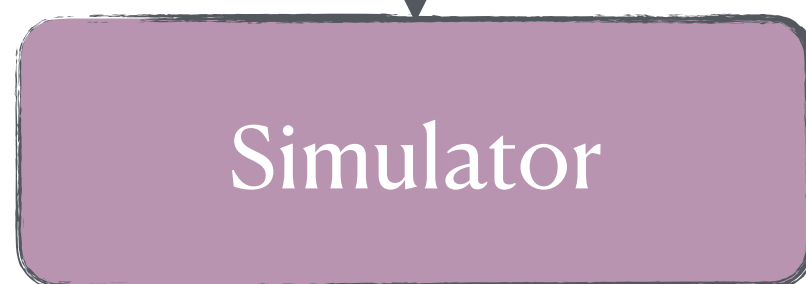GRAPPA
GRavitation AstroParticle Physics Amsterdam

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Square Kilometer Array

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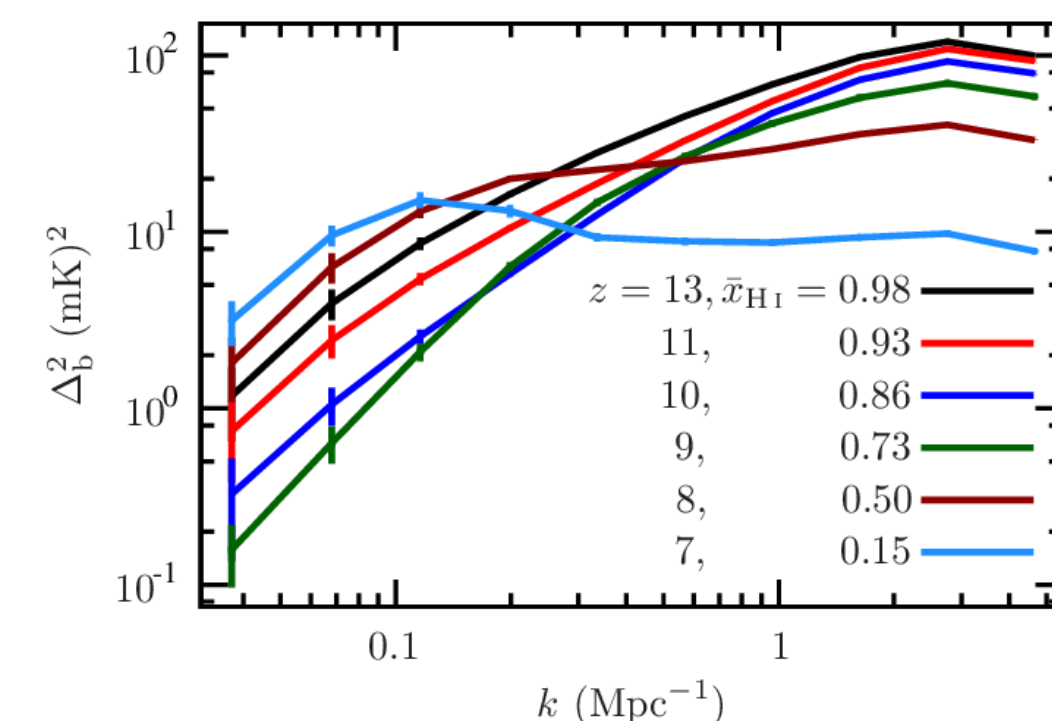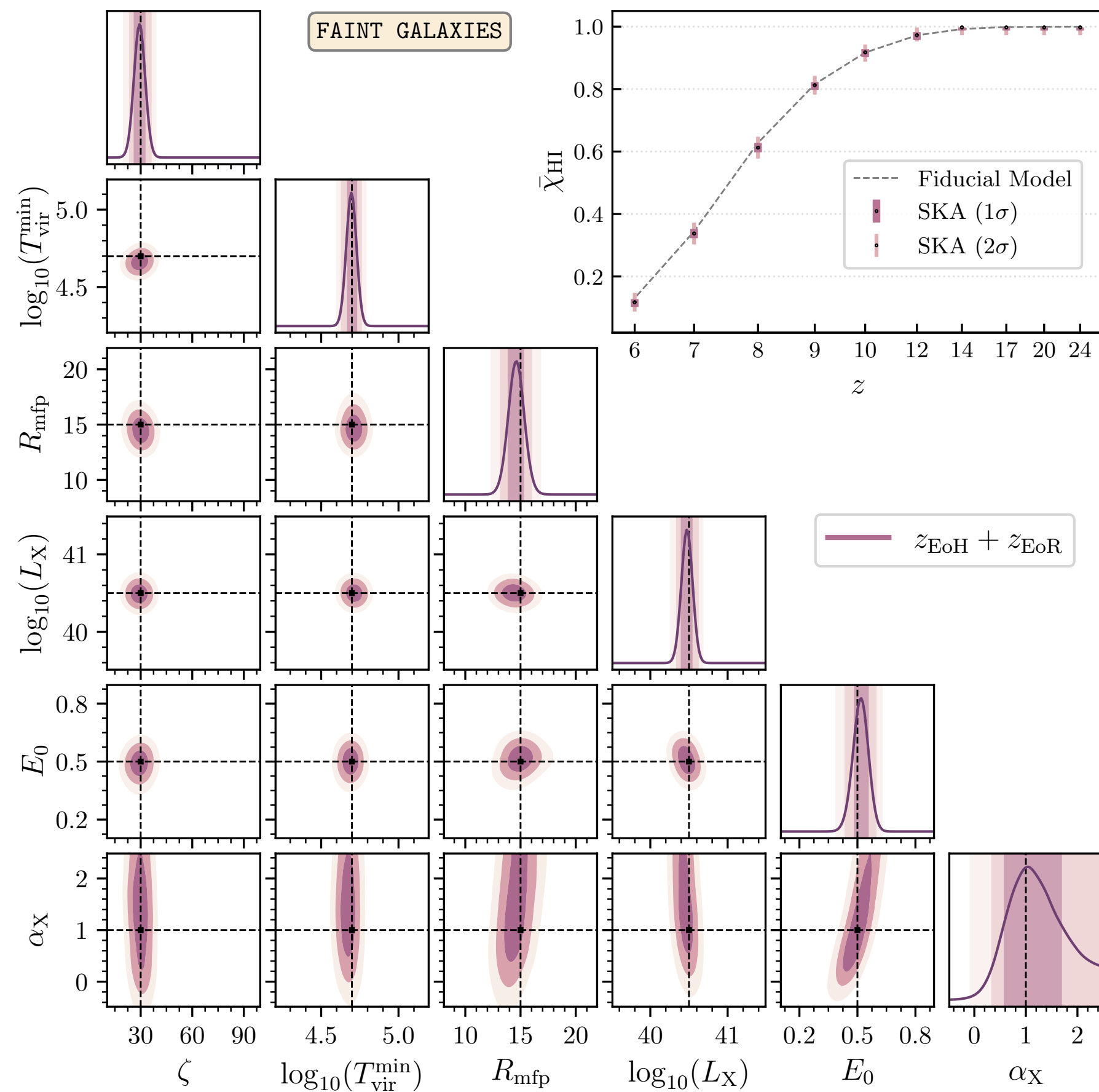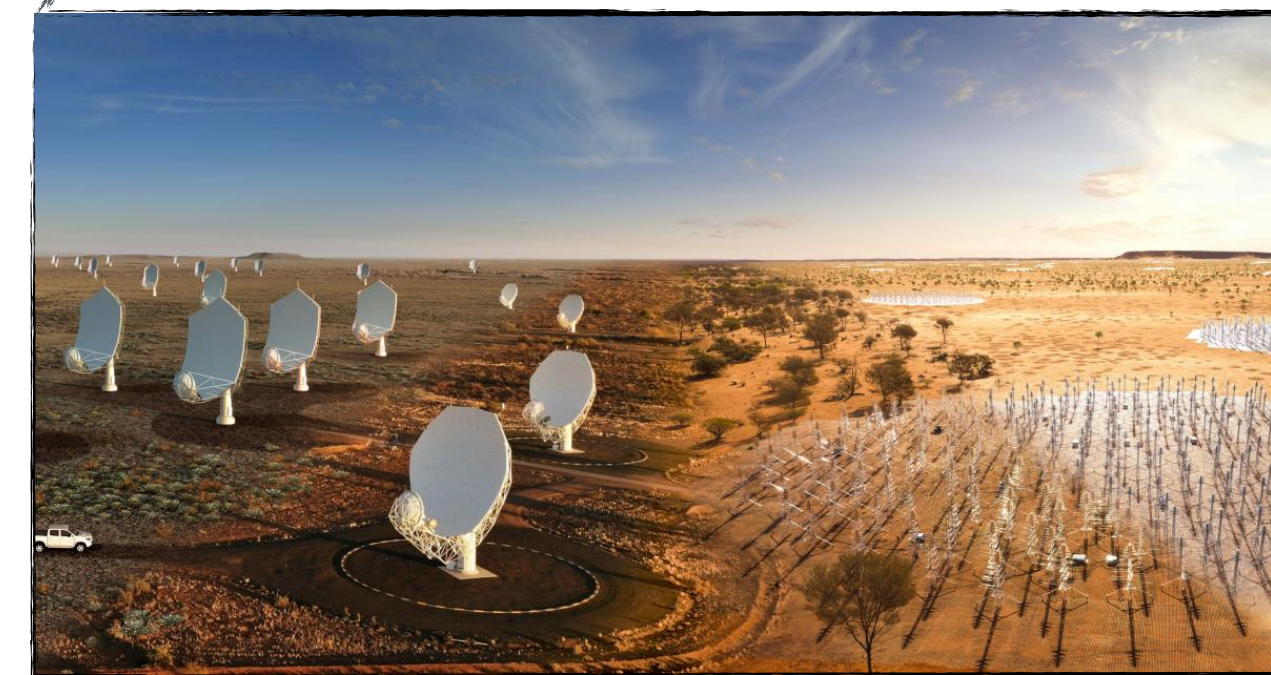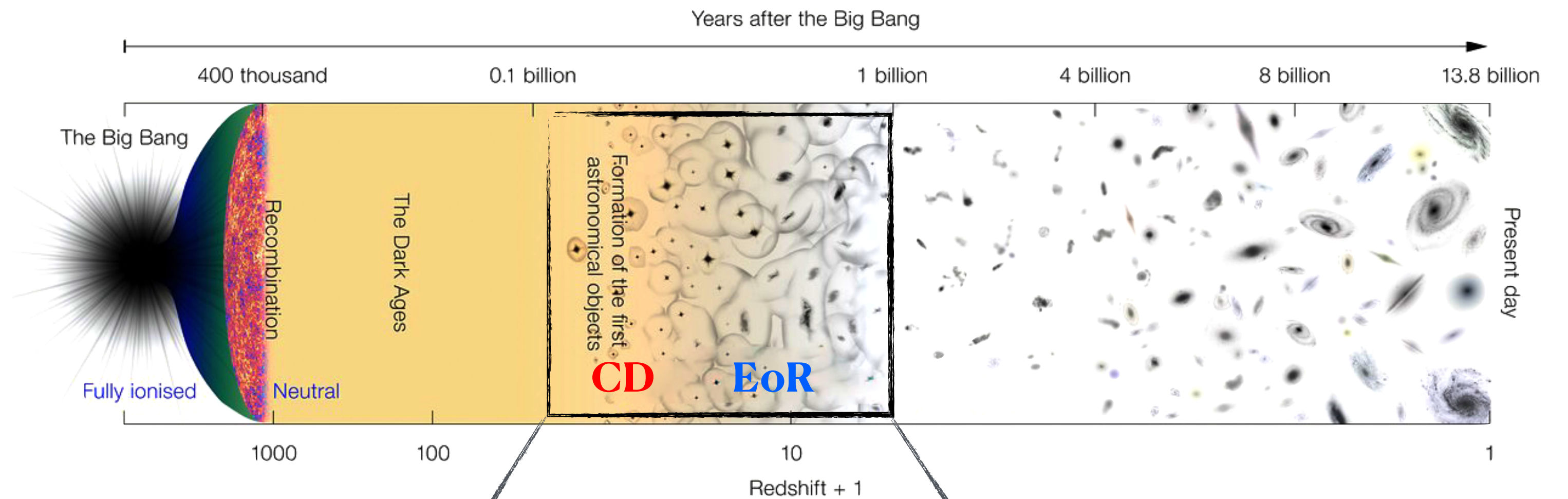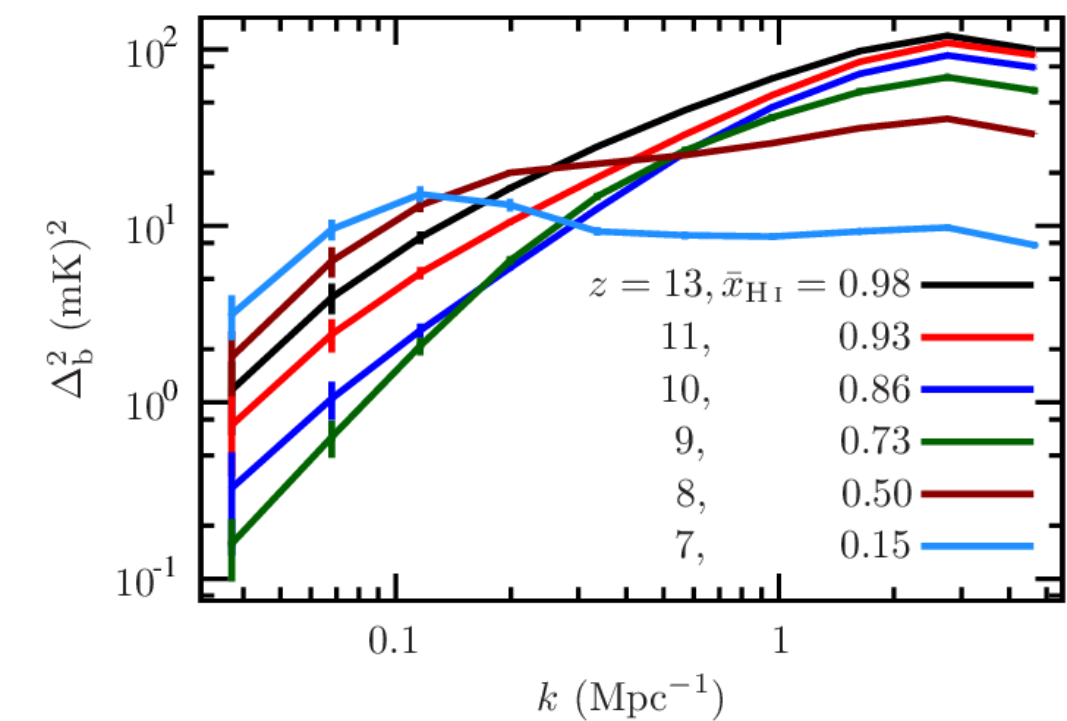**Anchal Saxena**, Alex Cole, Simon Gazagnes, Daan Meerburg, Christoph Weniger, Samuel Witte

Posterior on the astrophysical parameters with an order of magnitude fewer samples than MCMC
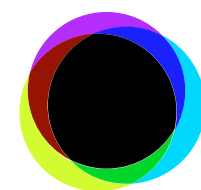

Square Kilometer Array