

Plots as a language

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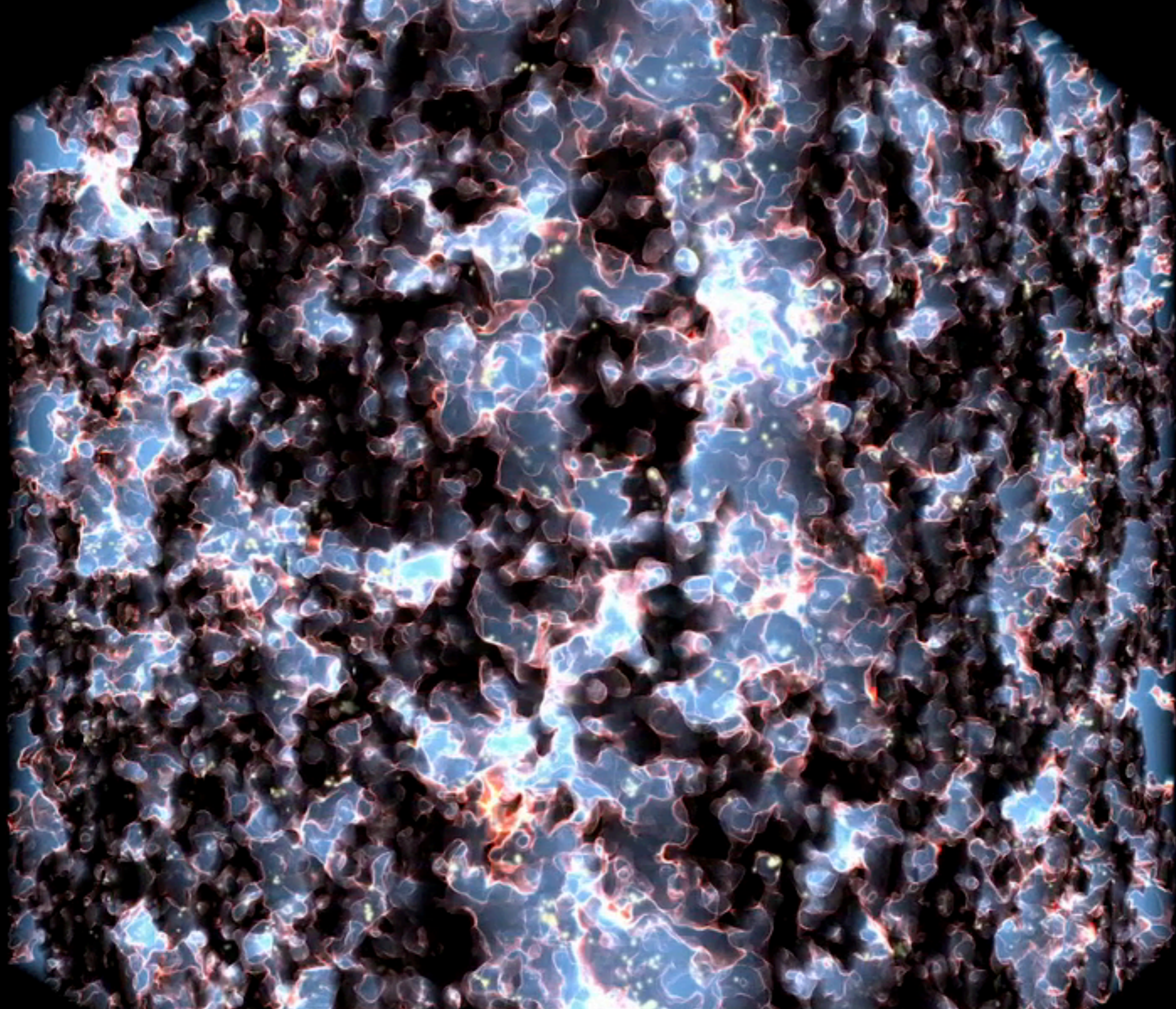


Drew Paine

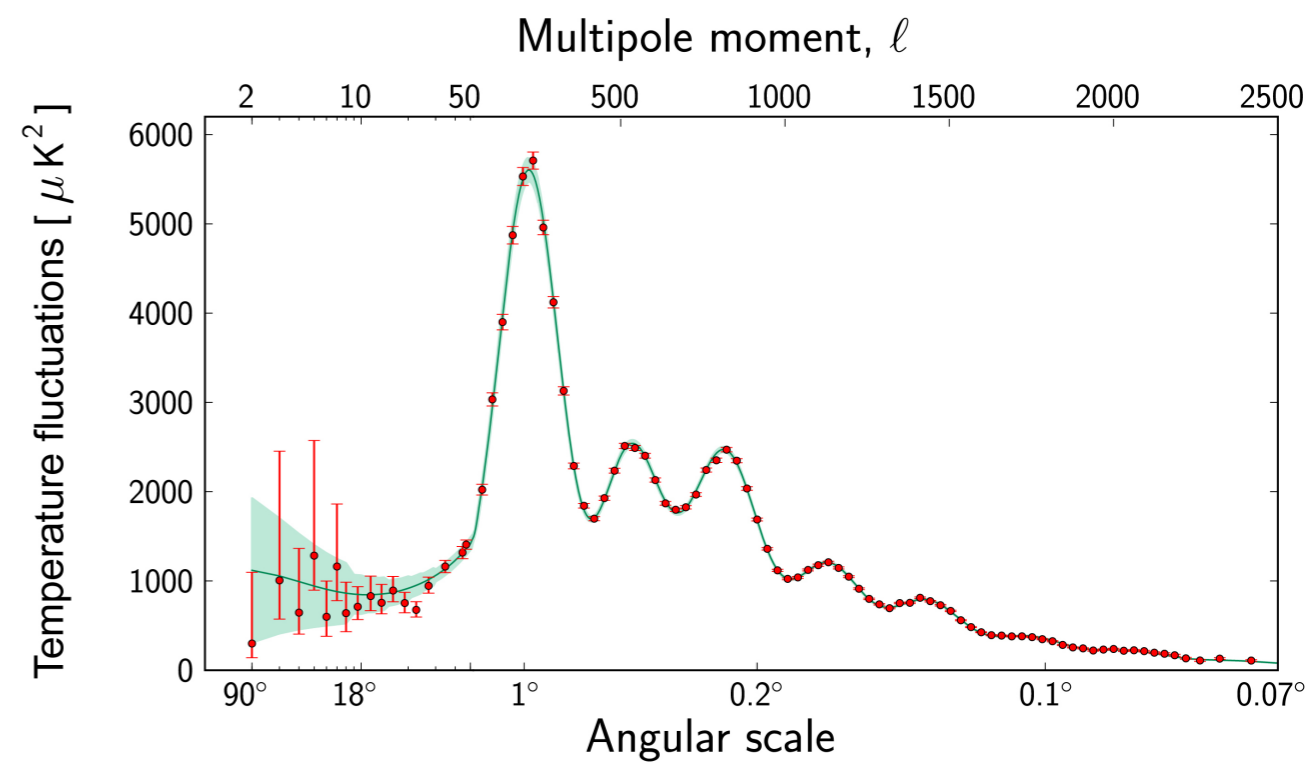
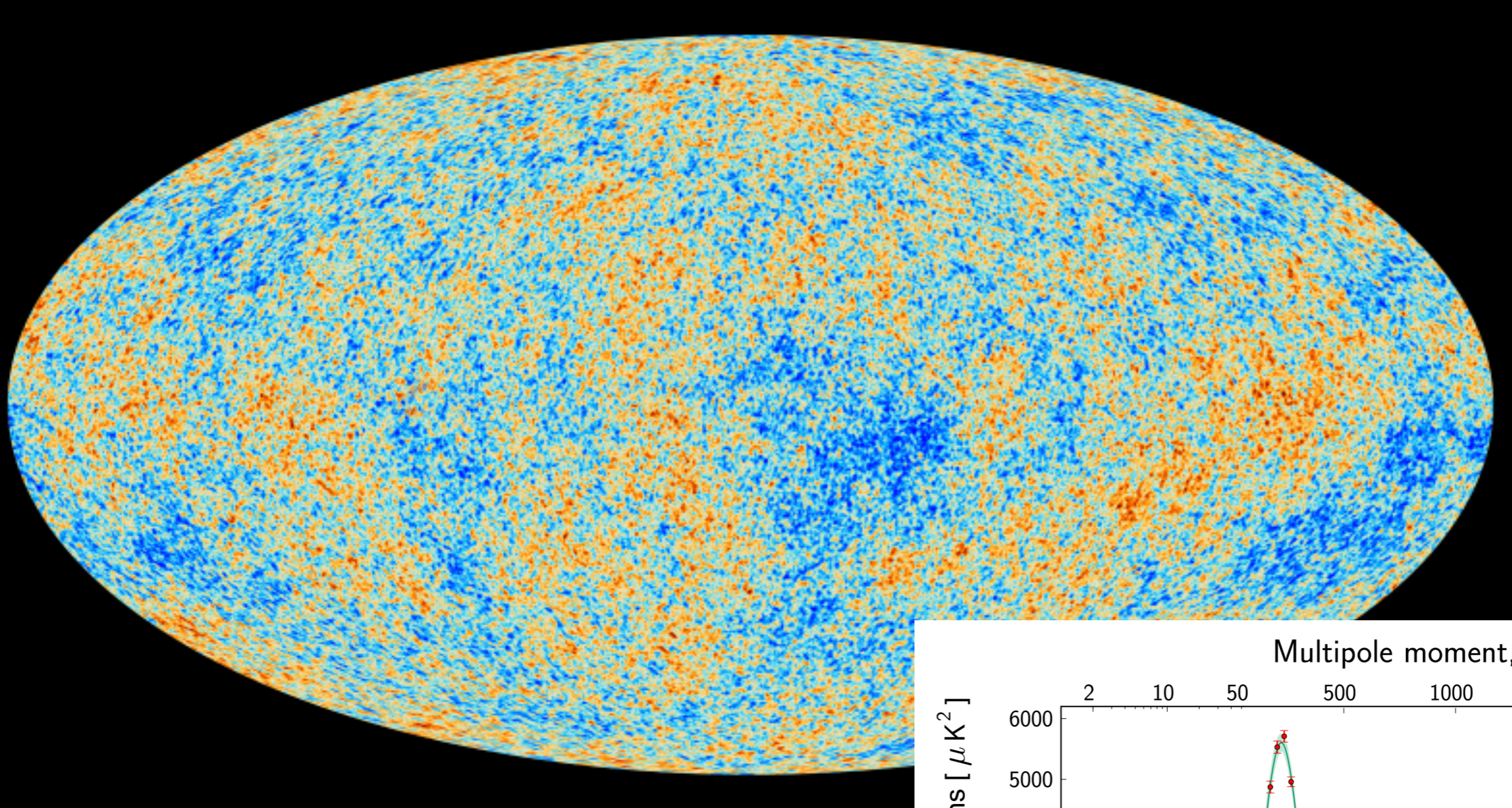
Software and Space: Investigating How a Cosmology Research Group Enacts Infrastructure by Producing Software

“I demonstrate how by using plots (visualizations of observation data, their software, and the physical telescope) they engage in rigorous and thoughtful testing and analysis of infrastructural components in their work.”

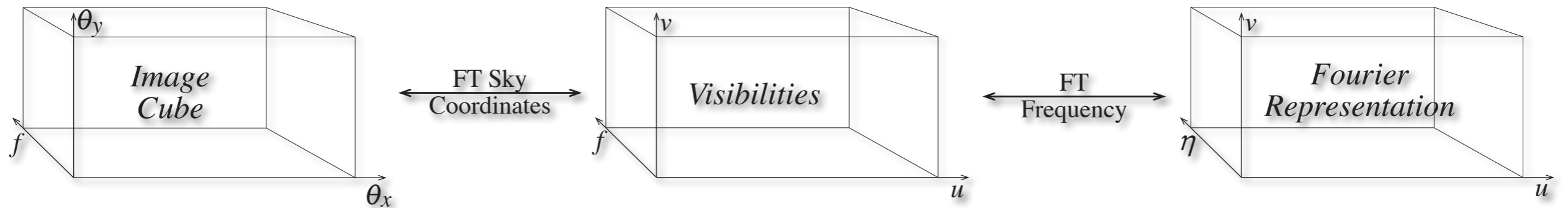
Plots as a shared language



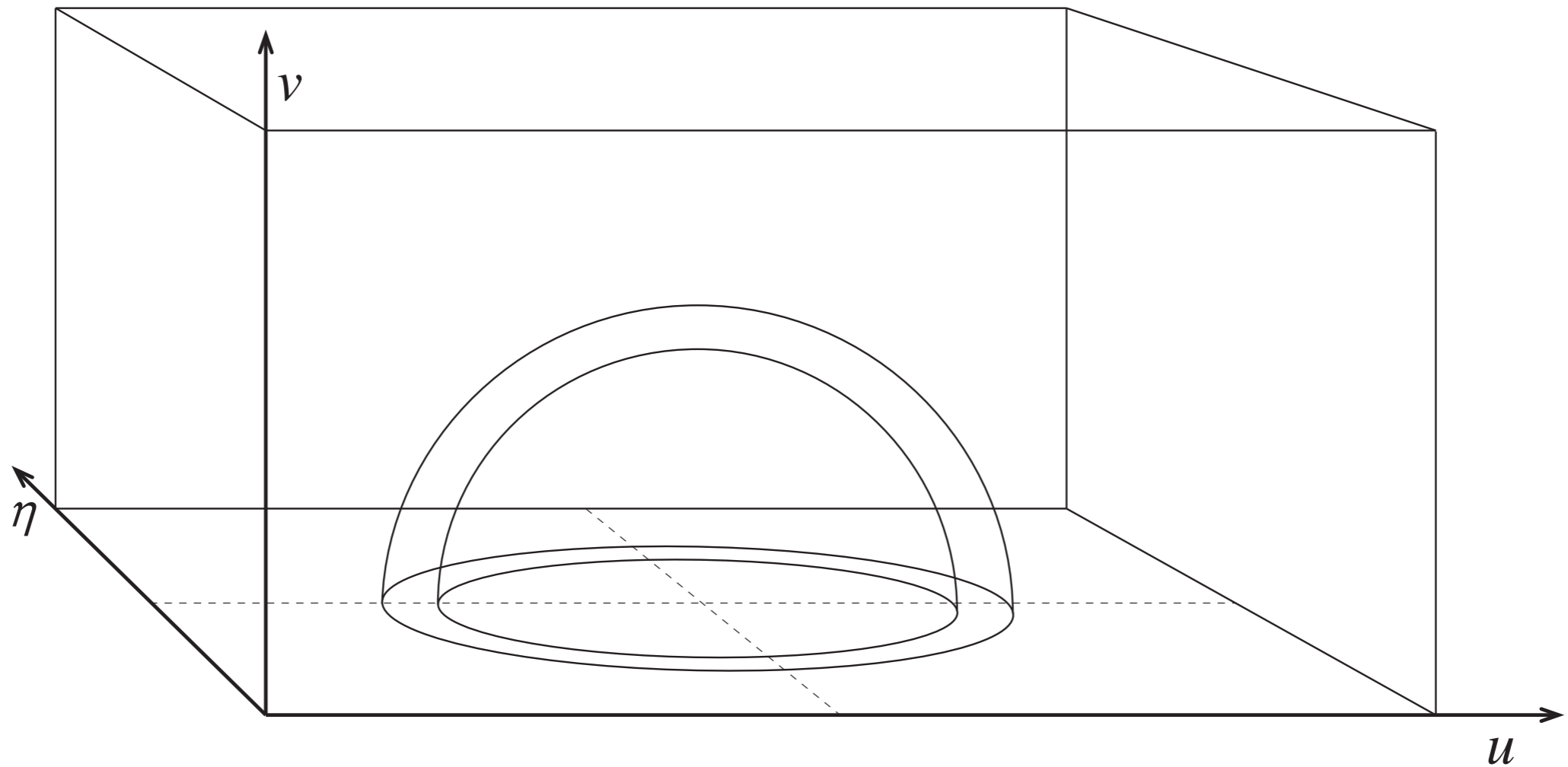
CMB



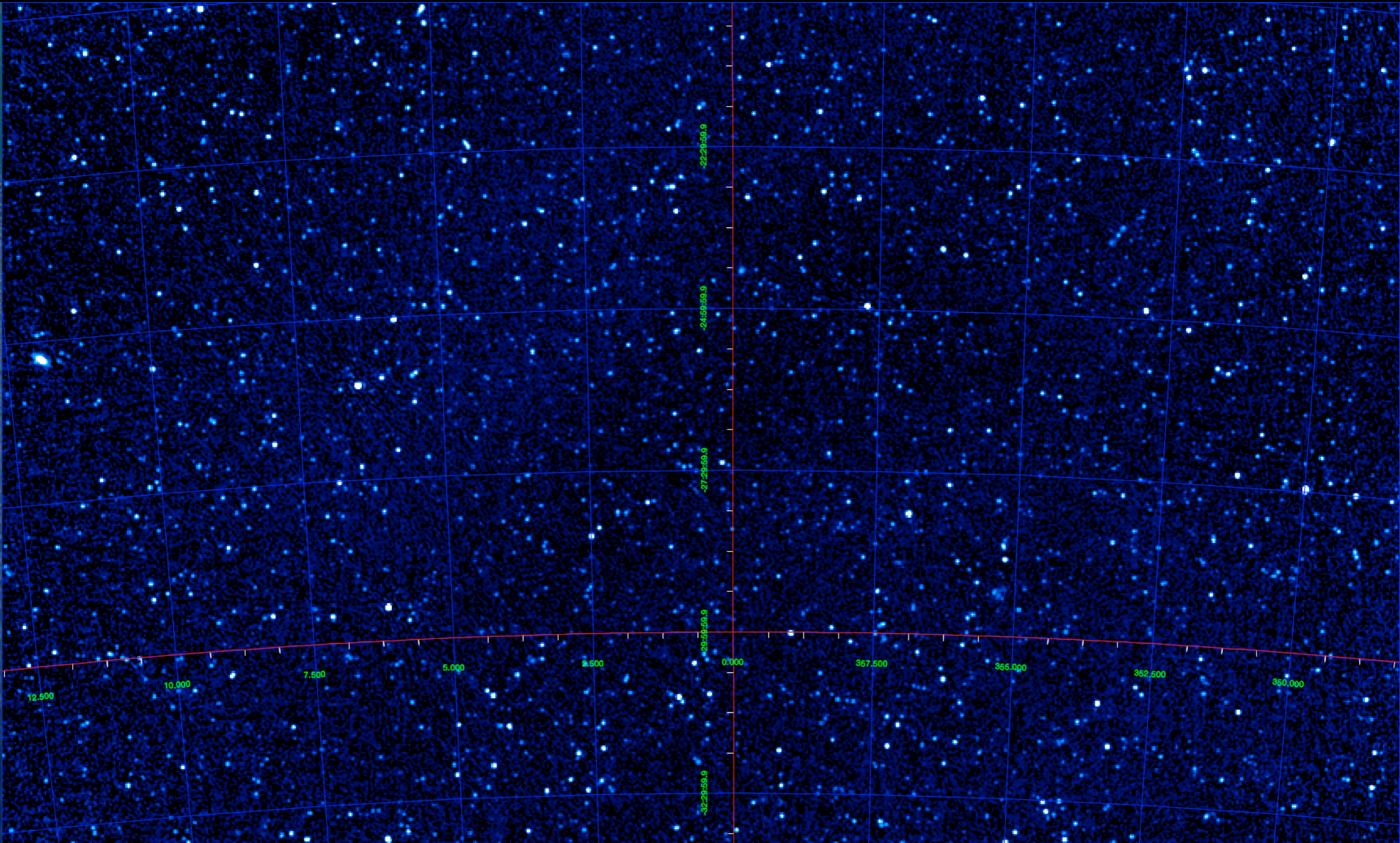
Statistical EoR measurement



Spherical symmetry

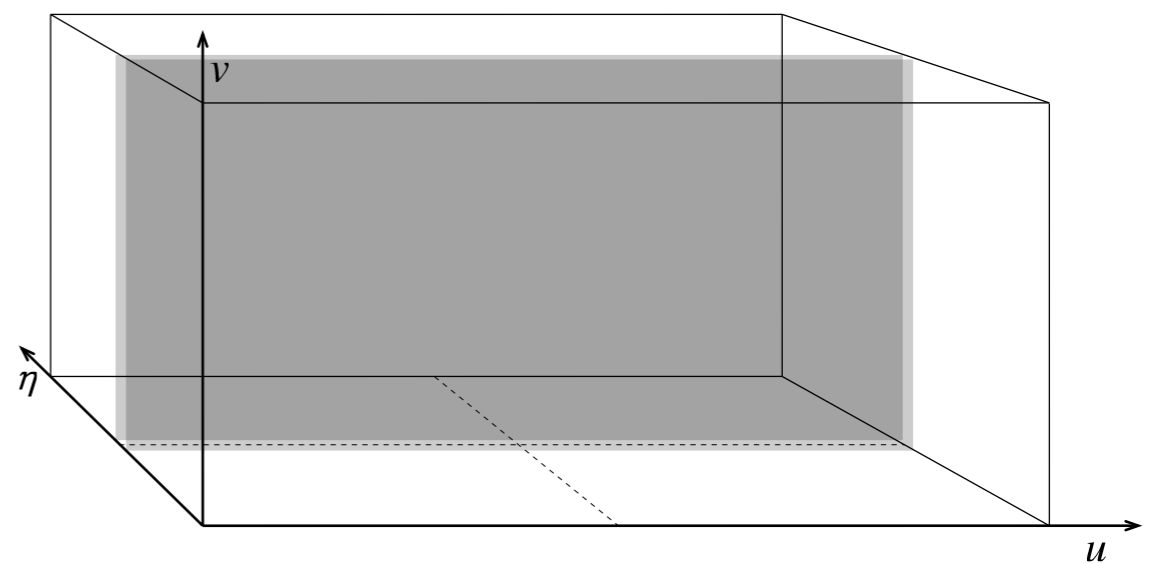
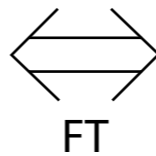
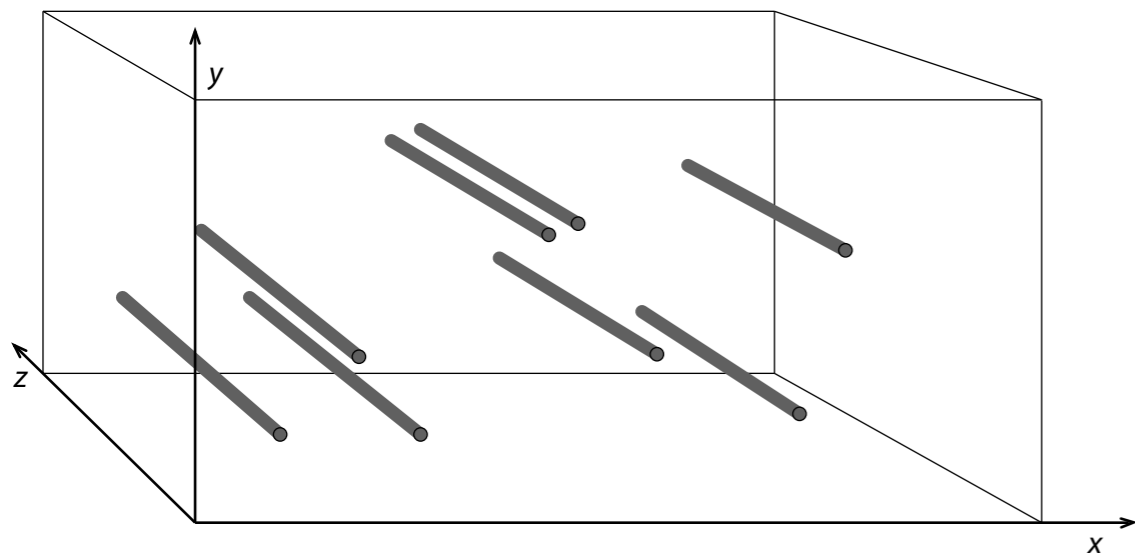


Moon to scale

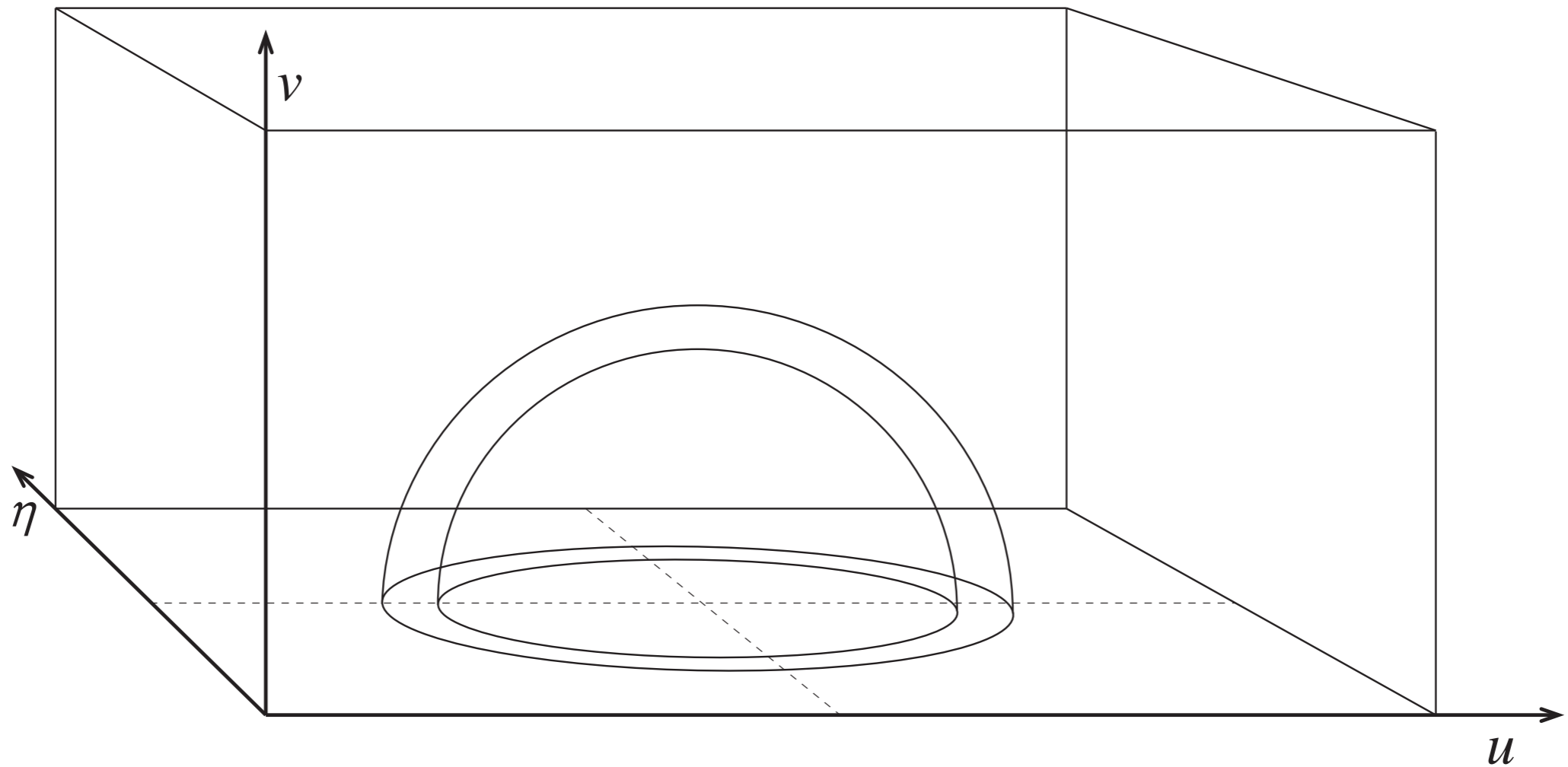


2 minutes of data, dark field, signal dominated

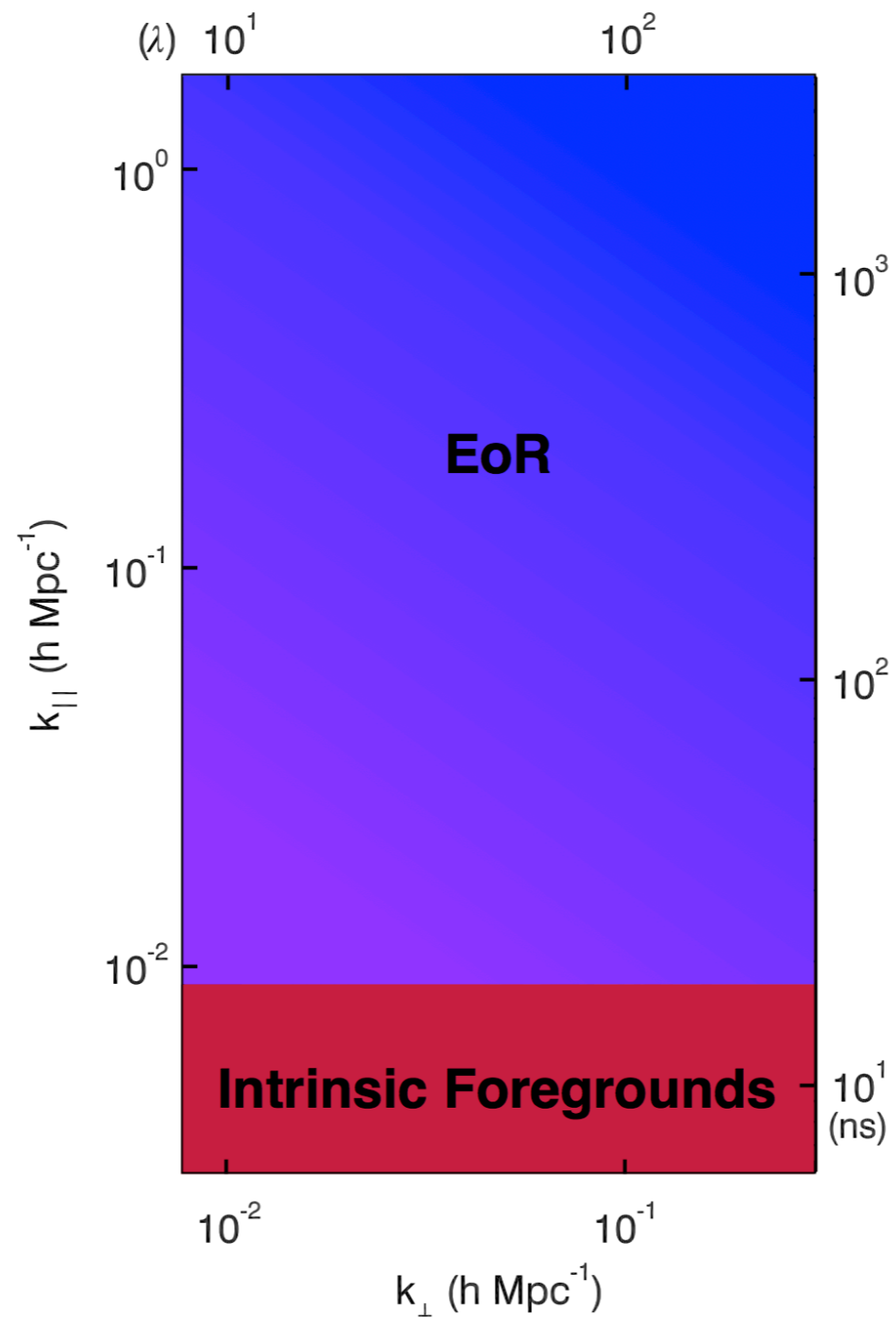
Foreground symmetry



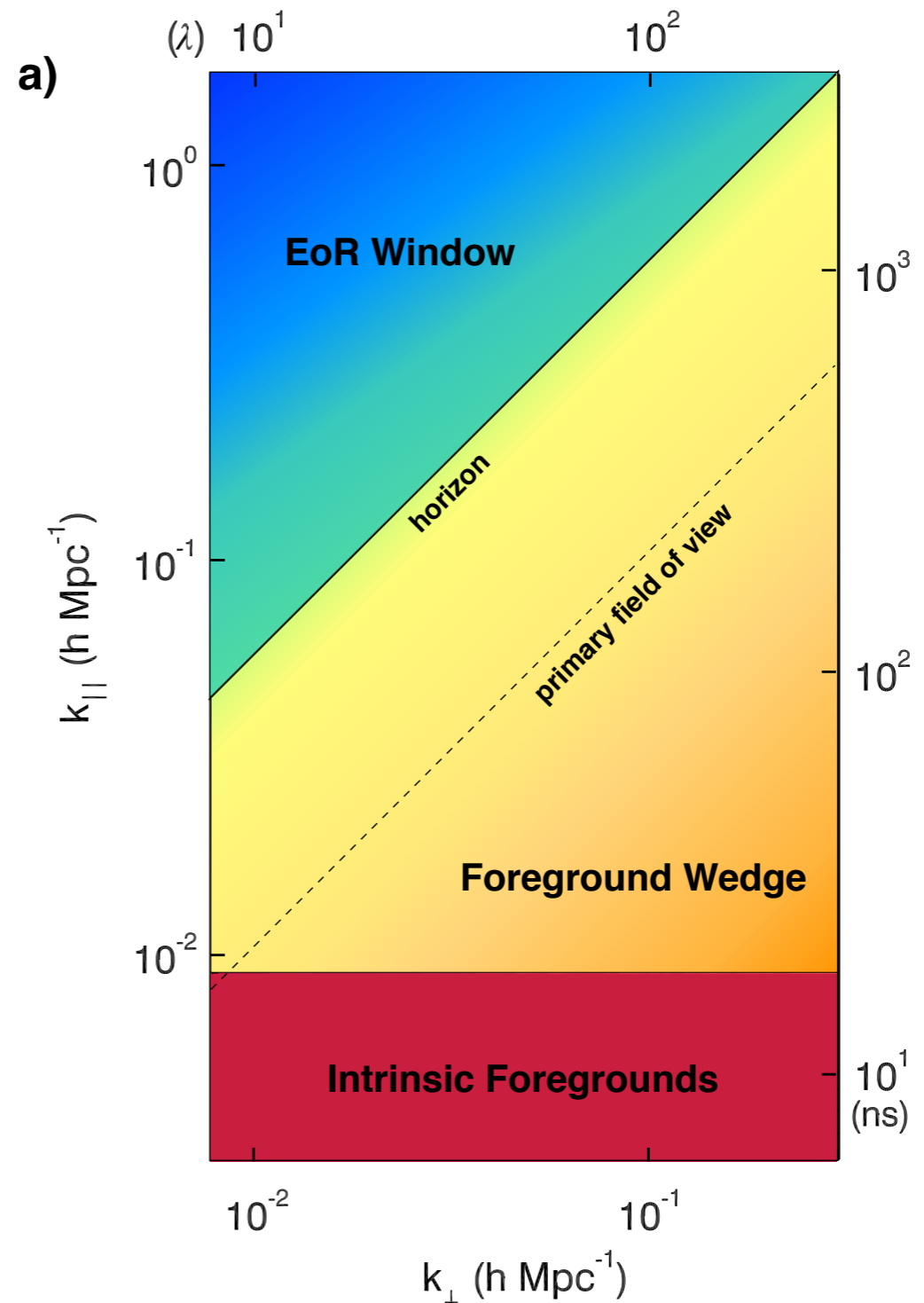
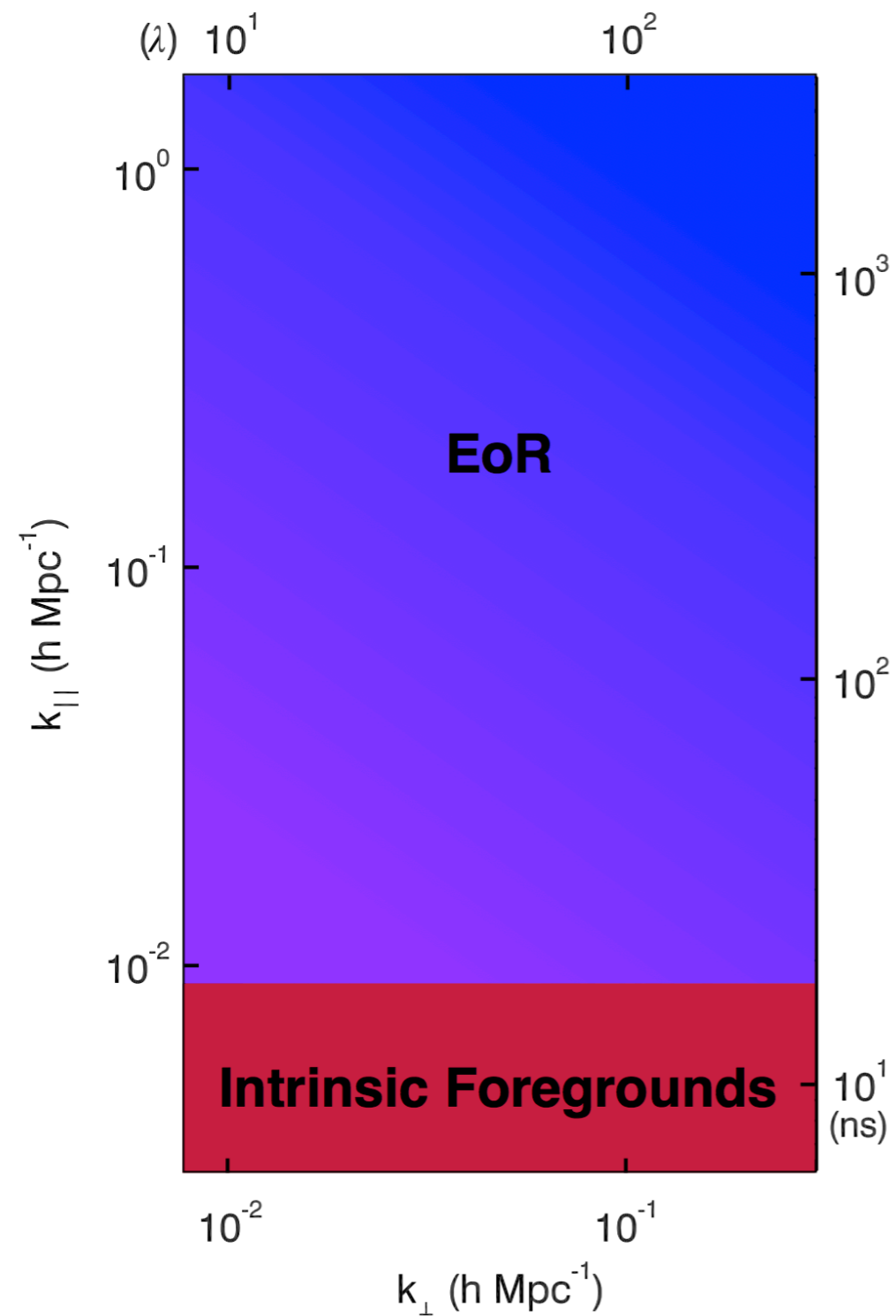
Spherical symmetry



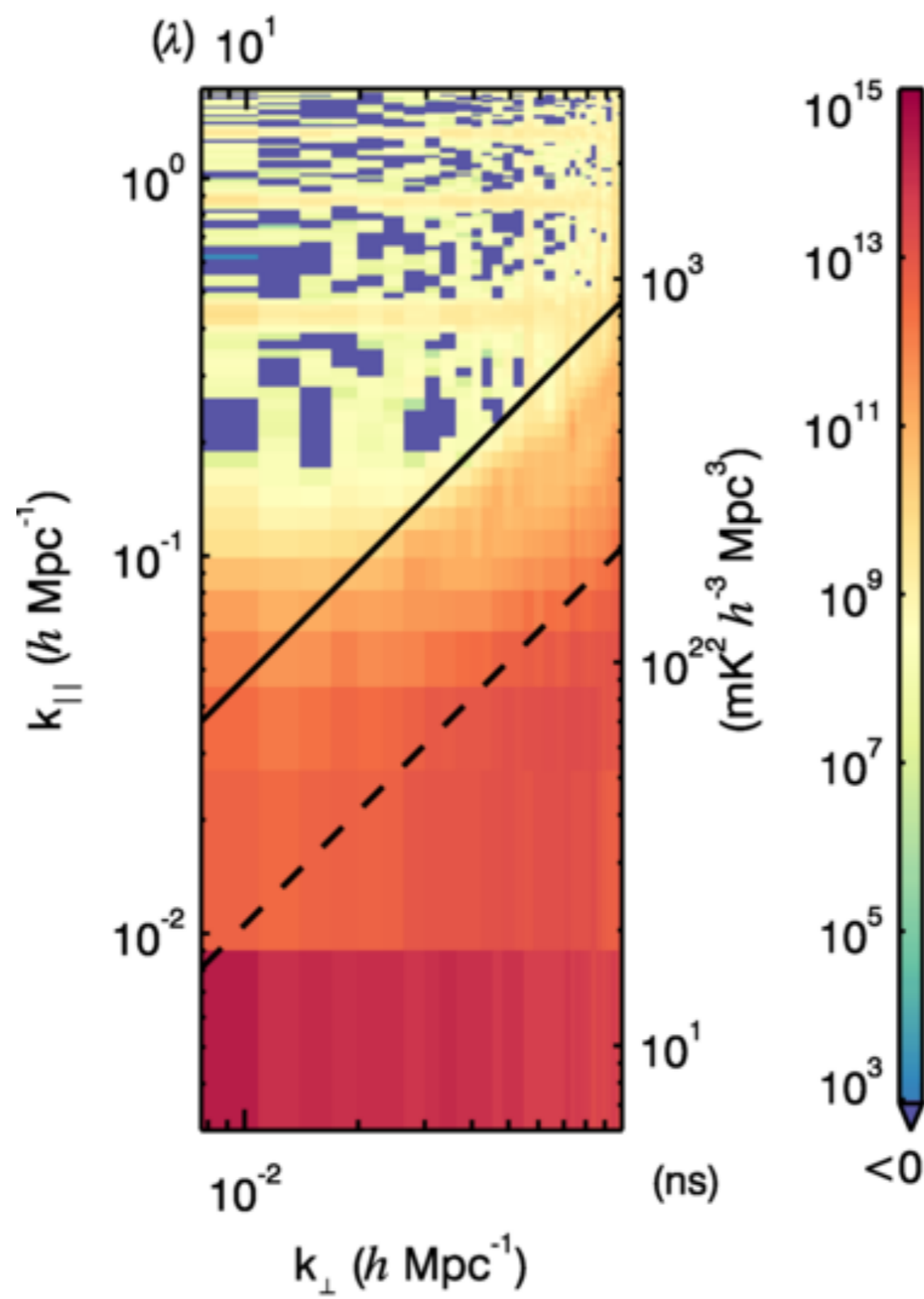
Foregrounds

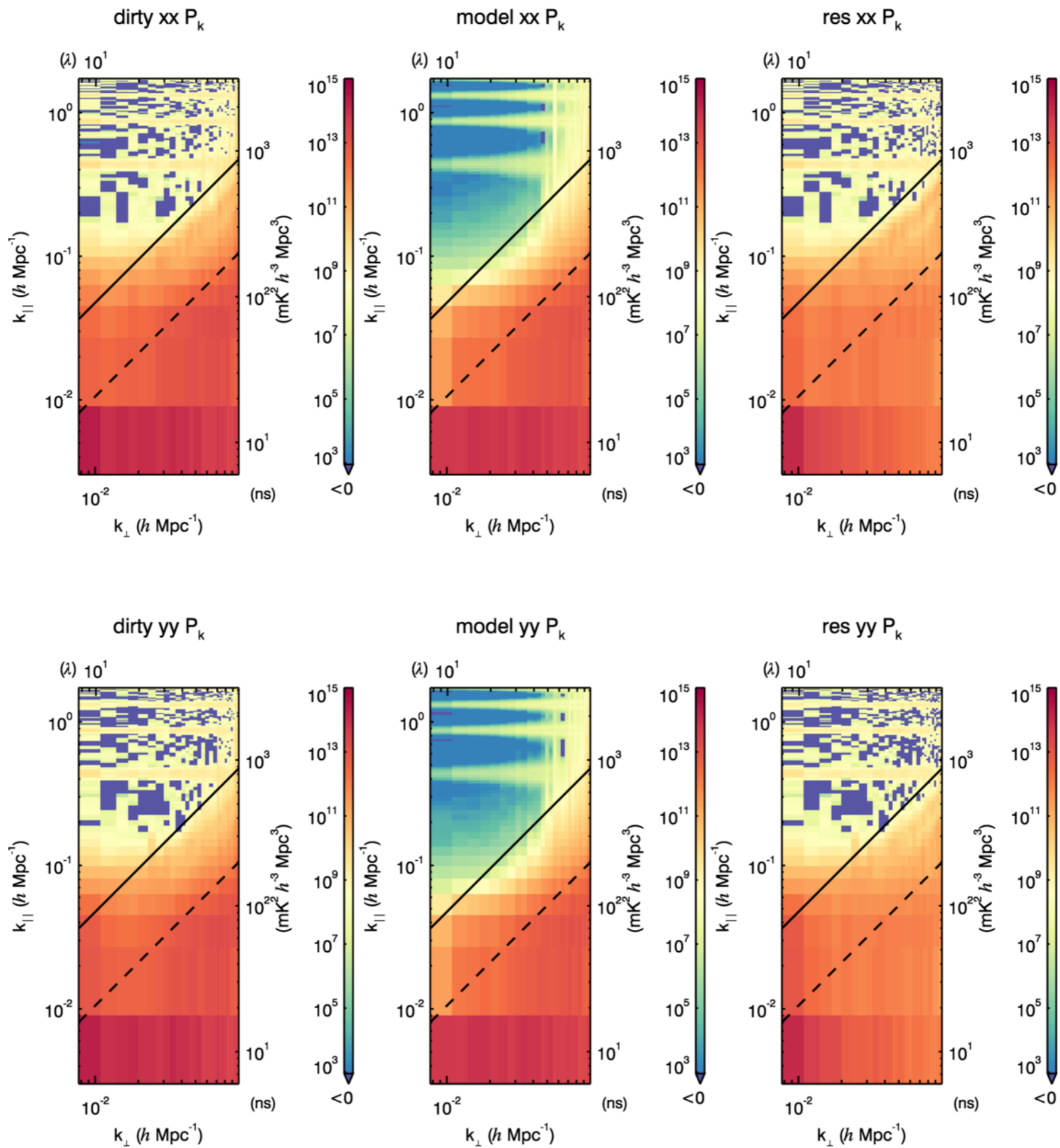


21 cm window



dirty xx P_k



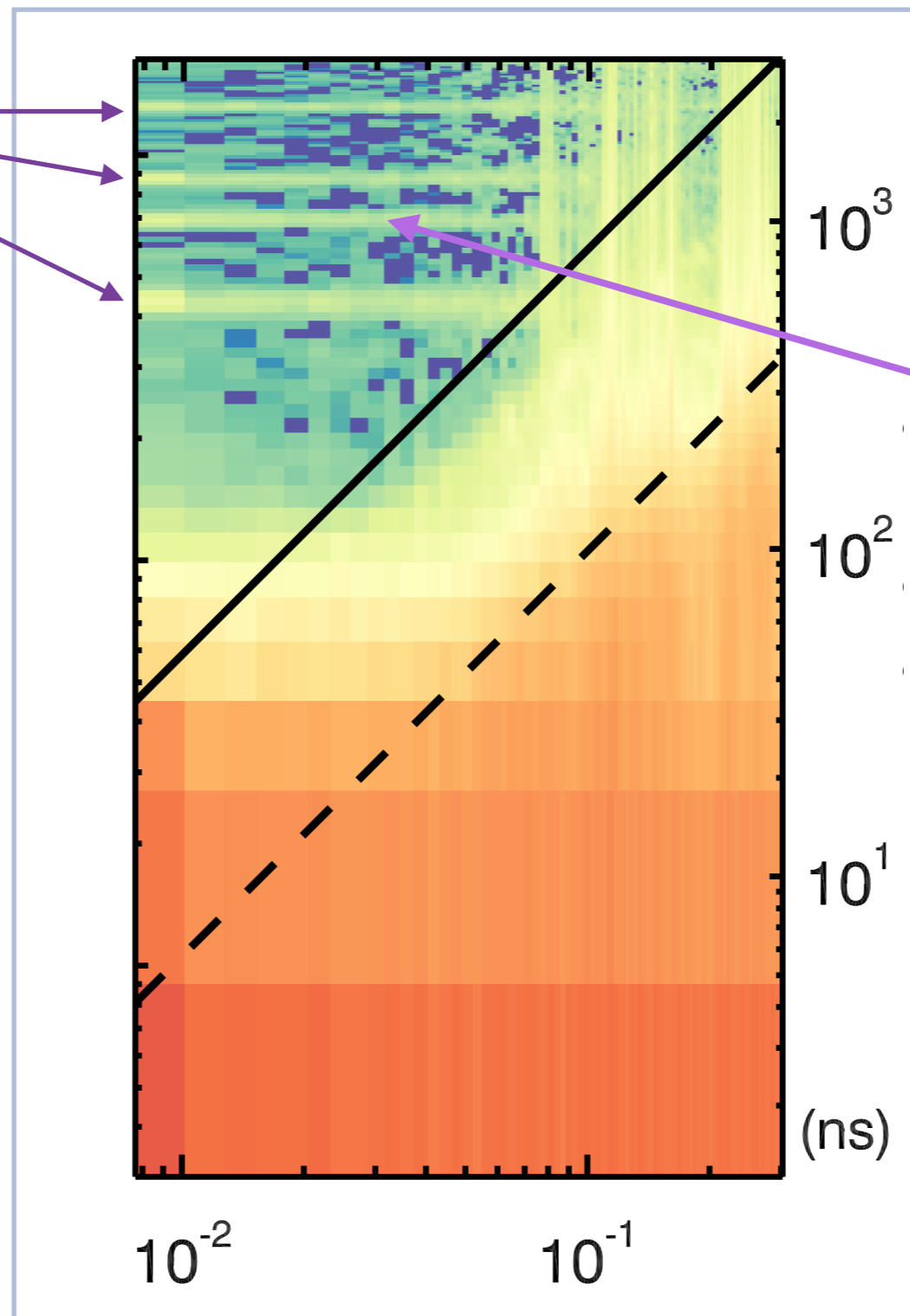




Precision Calibration

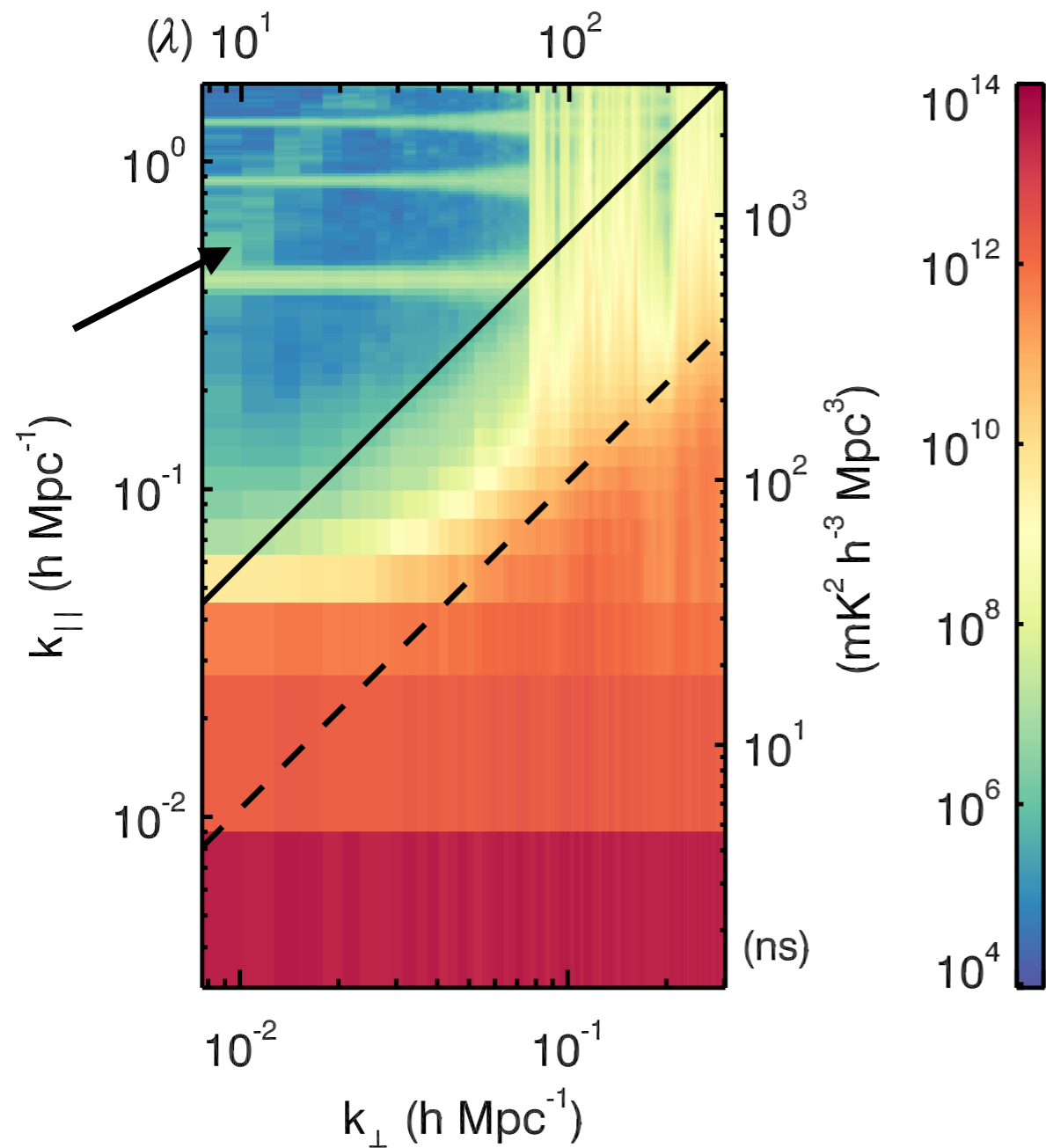


Frequency gaps

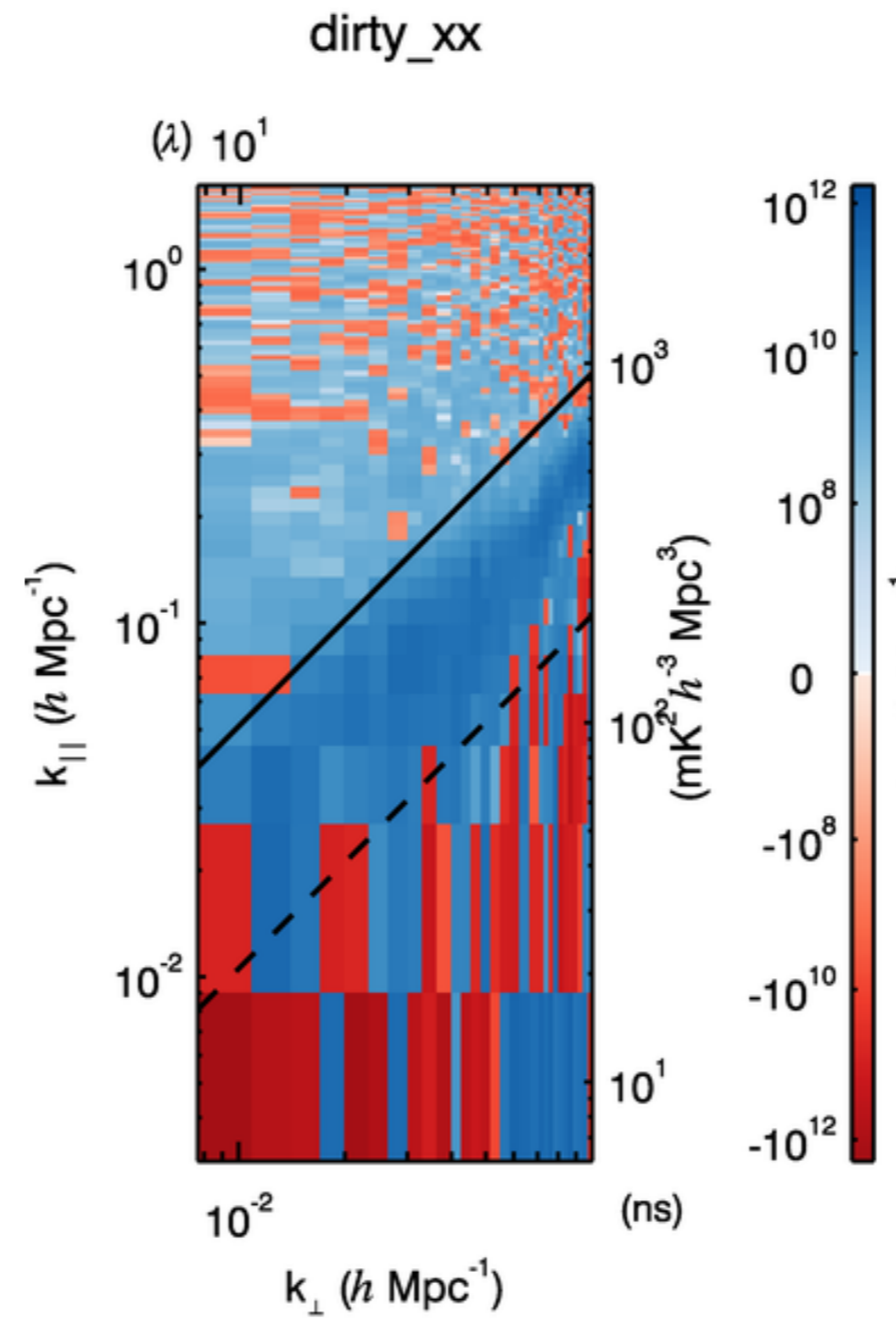


150 m cable reflection

Precision Analysis

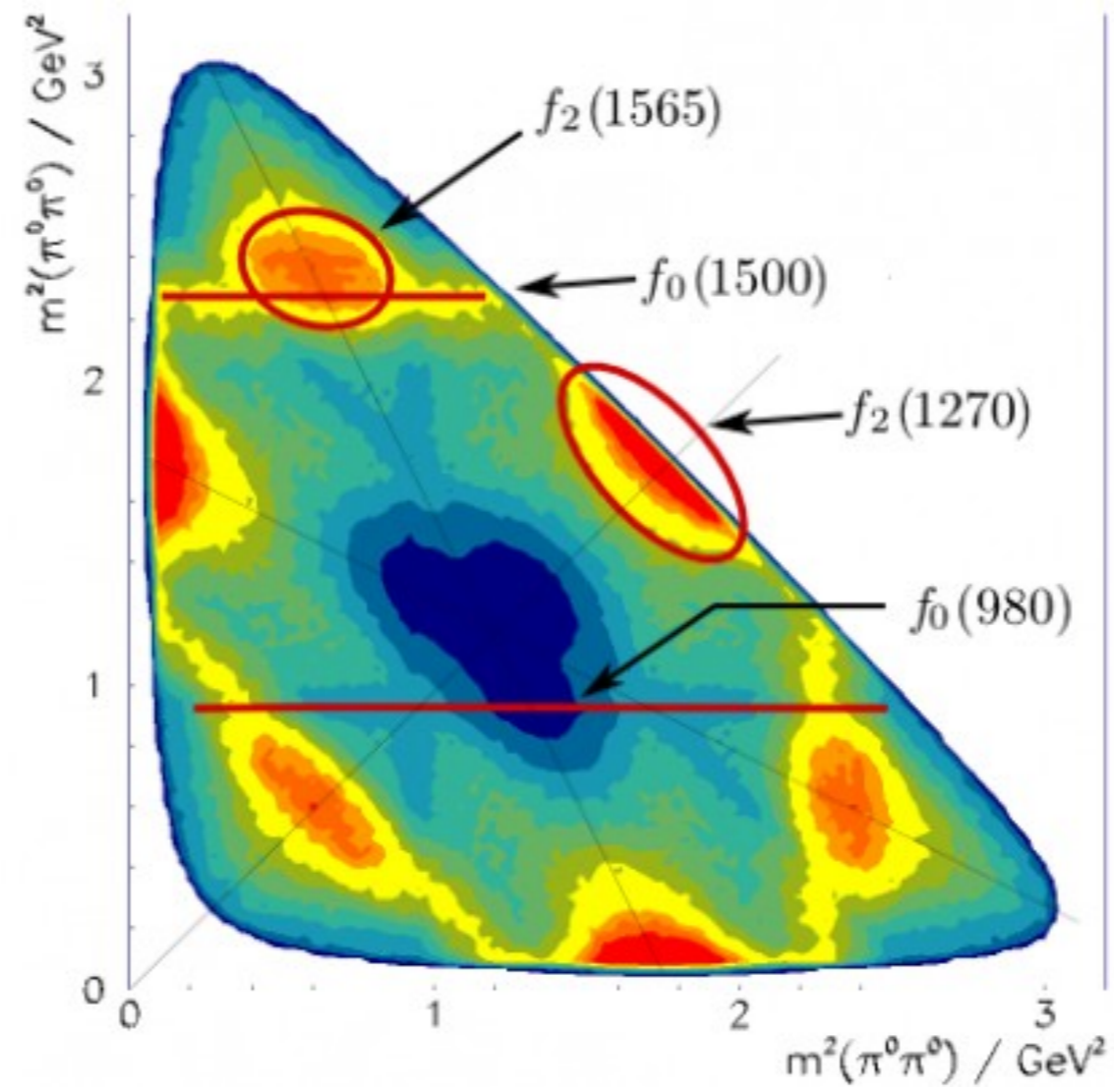


Extensions



Dalitz Plots

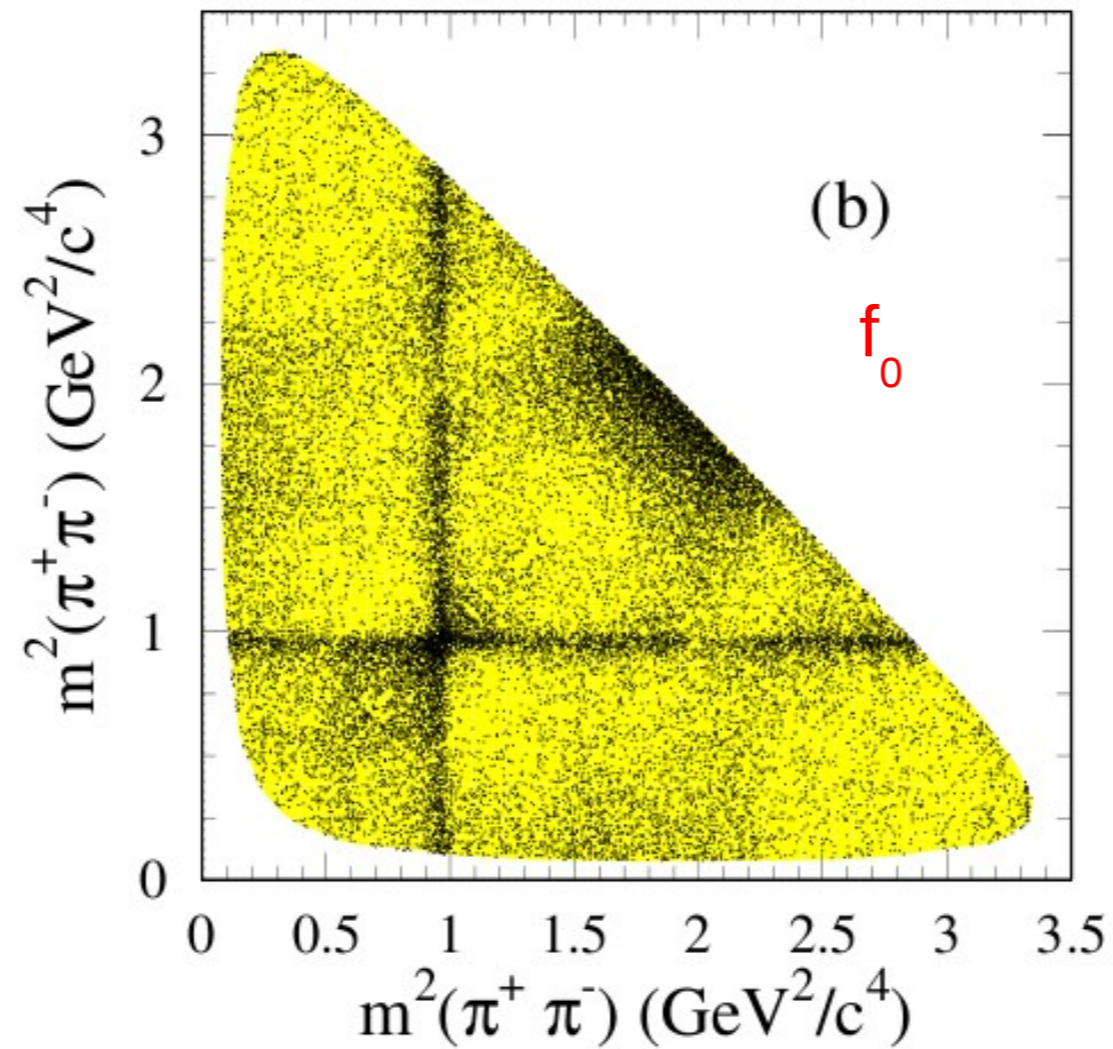
Dalitz plots



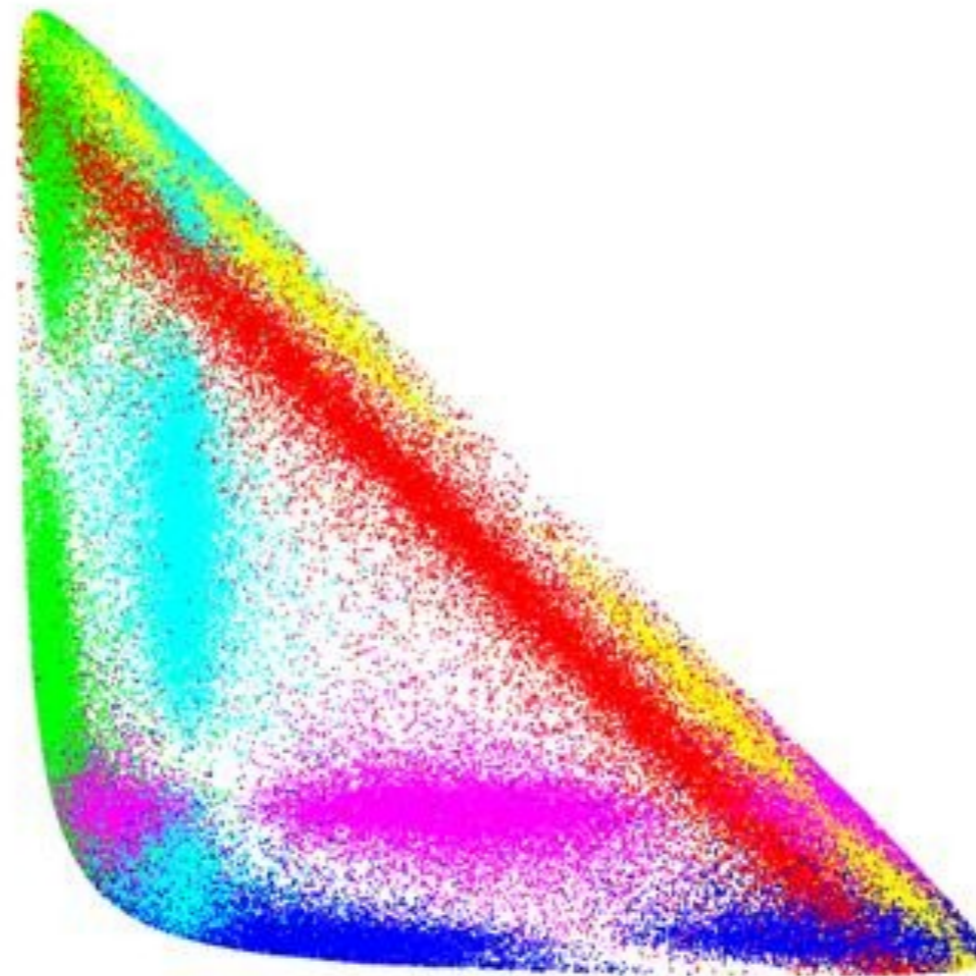
Dalitz plots

$$D_s^+ \rightarrow \pi^+ \pi^- \pi^+$$

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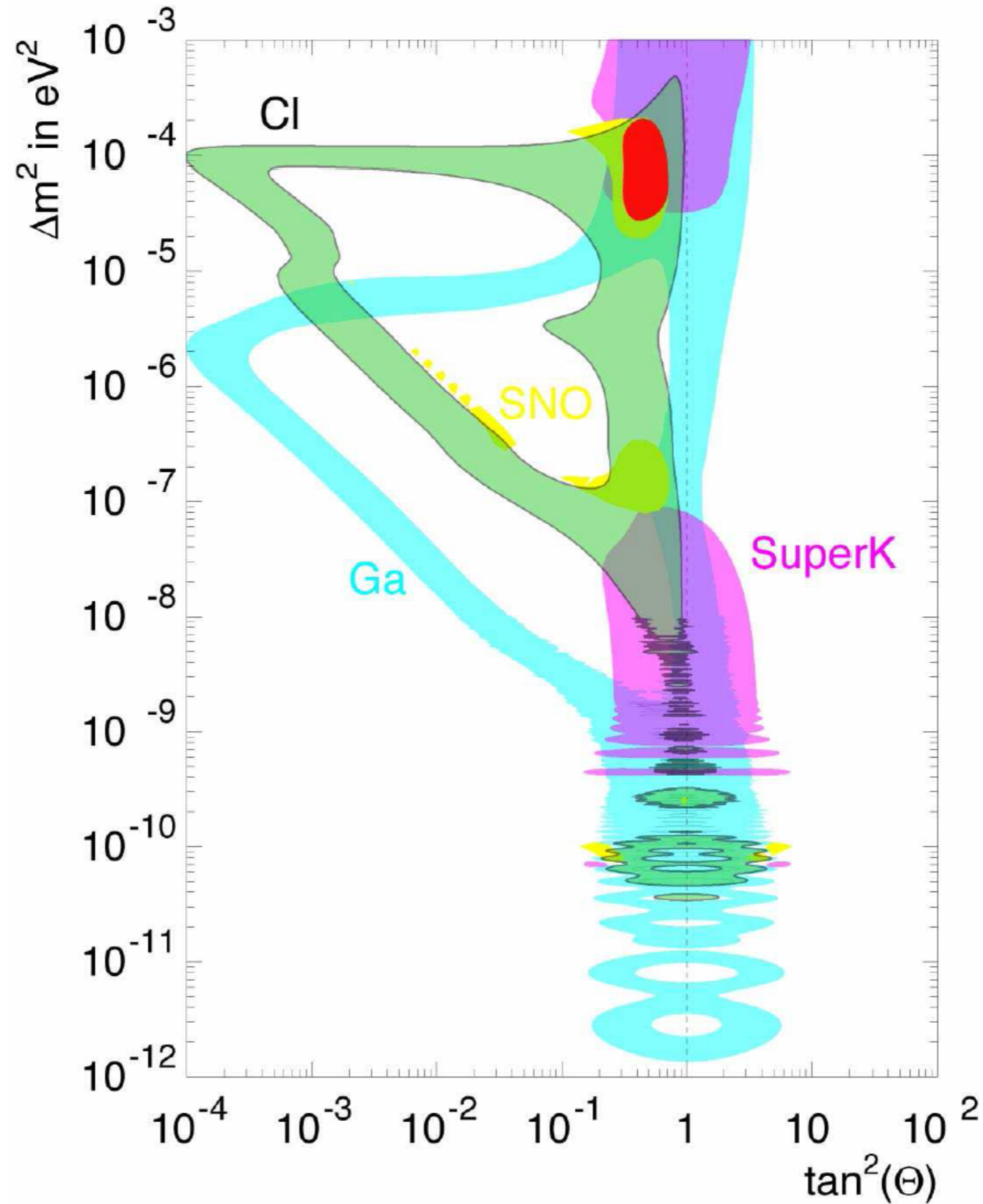


Dalitz plots

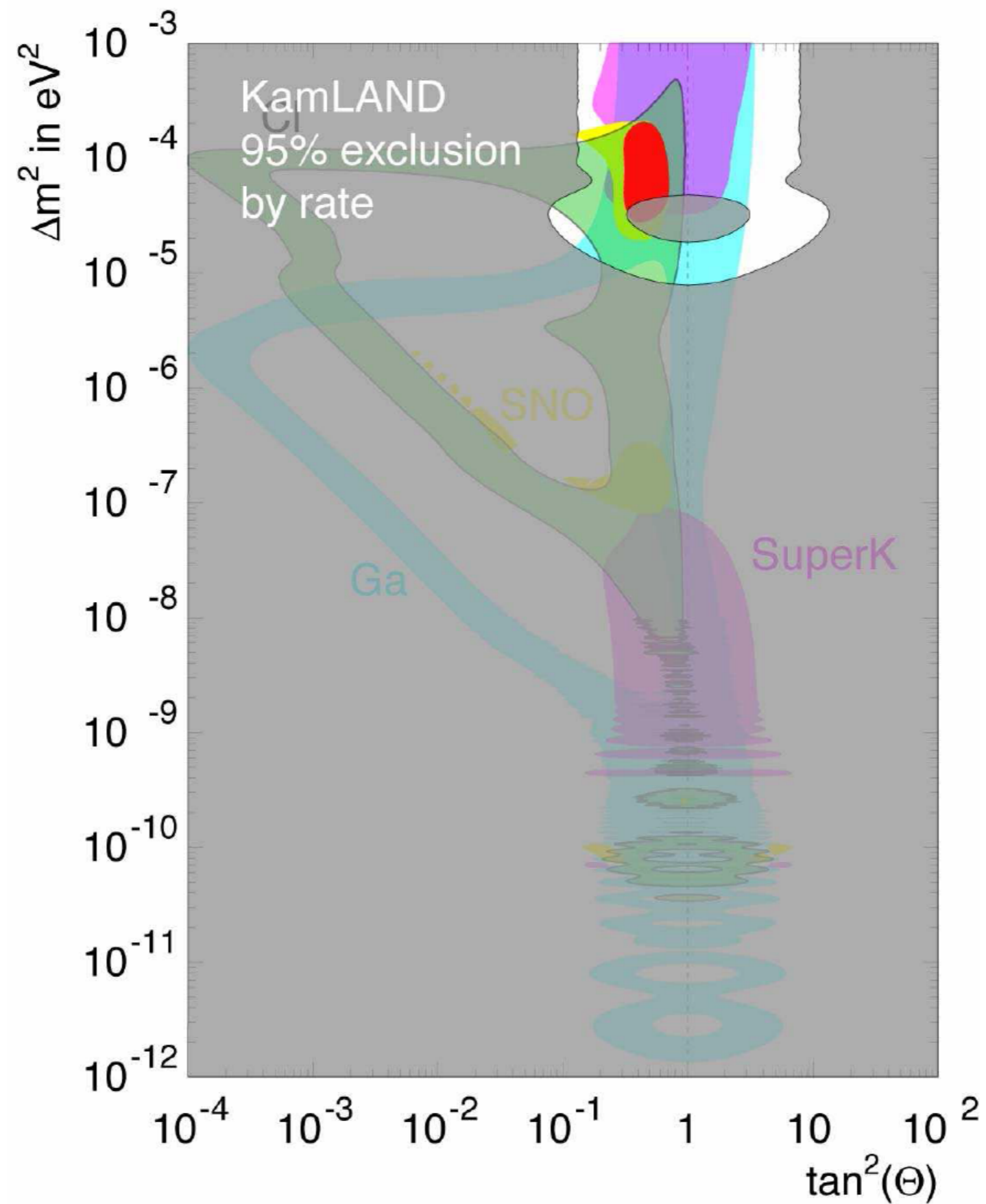


Neutrino oscillation plots

Solar Neutrino Mixing Parameters

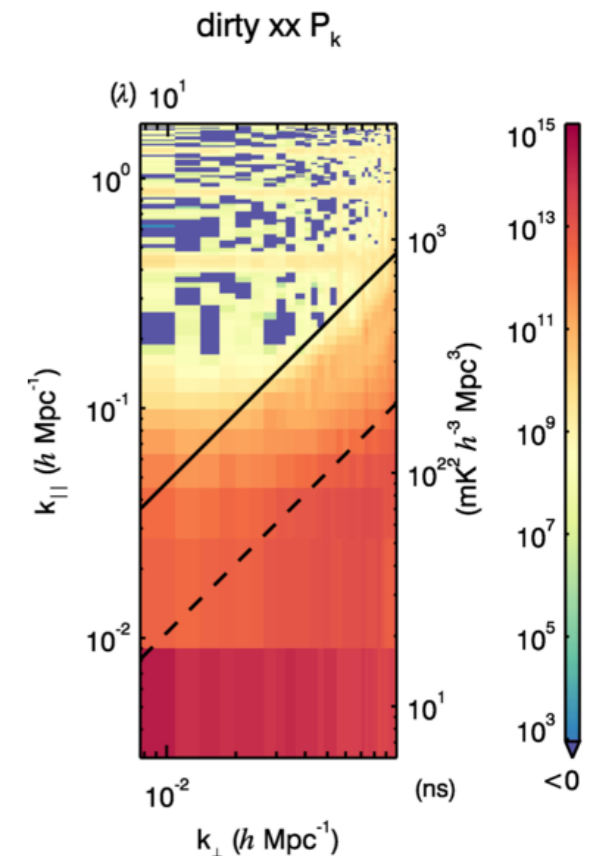


Solar Neutrino Mixing Parameter



Making yourself (and your advisor) famous

- Data rich
- Highlight or emphasize key features
- Defines a set of adjectives for experts to discuss
- Can define the directions of a field's research
- Facilitates communication via shared language of plots



Developing a shared language

Be thoughtful about:

- Data rich
- Emphasis (positive & negative)

Iterative shared development

- These take time

