

Summary of T2 Parallel Session (systematics & noise realism in S4 simulations--approach and prioritization)

- **Systematics:**

- summary of current approach to incorporating systematics in r forecasting working group (Kovac)
 - additive residuals after doing all the hard work of characterizing and taking out typical systematics to the level possible for a given map noise level
 - most pernicious are band-correlated residuals.
 - implemented, with preliminary results from analyzers.
 - discussion of additive vs. multiplicative systematics and systematic residuals, note that mixing with calibration etc. can change type of behavior from additive to multiplicative or vice-versa
 - ACTION ITEM: start addressing systematics more properly (at all?) in delensing sims/forecasting
- addressing systematics through full time-ordered-data modeling (TOAST! Julian)
 - despite seeming crazy, it is approaching feasible to do full CMB-S4 TOD sims
 - ACTION ITEM: plan for incorporating this into current sim/forecasting

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- **Noise realism:**

- Talk on Simons Observatory noise calculator (Niemack)
 - observation: This very impressive tool is really for instrument design optimization, but going to mapping speed on sky is still done in the old style (assume yield, observing efficiency, etc.).
 - Fundamental issue: we have a few different ways of estimating noise curves for delensing survey (and/or high-ell science survey), and they disagree by factors of 2. They are all defensible at some level. How to figure out path forward?

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- **Uncomfortable subject that came up and is above the pay grade of this parallel session:**
 - what is the relationship of SO and S4 forecasting?
 - there appears to have been resource drain from S4 work into SO. S4 has benefited from those results, but so far mostly at the level of being presented with finished work
 - how to make this connection work better for S4?