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Deliverable 8.2: Systematic error simulations

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Work Package WP8 – Systematic errors

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Revision History

Version	Authors	Date	Changes
1.0	Hans Kristian Eriksen	December 1st, 2020	Initial Version

Contents

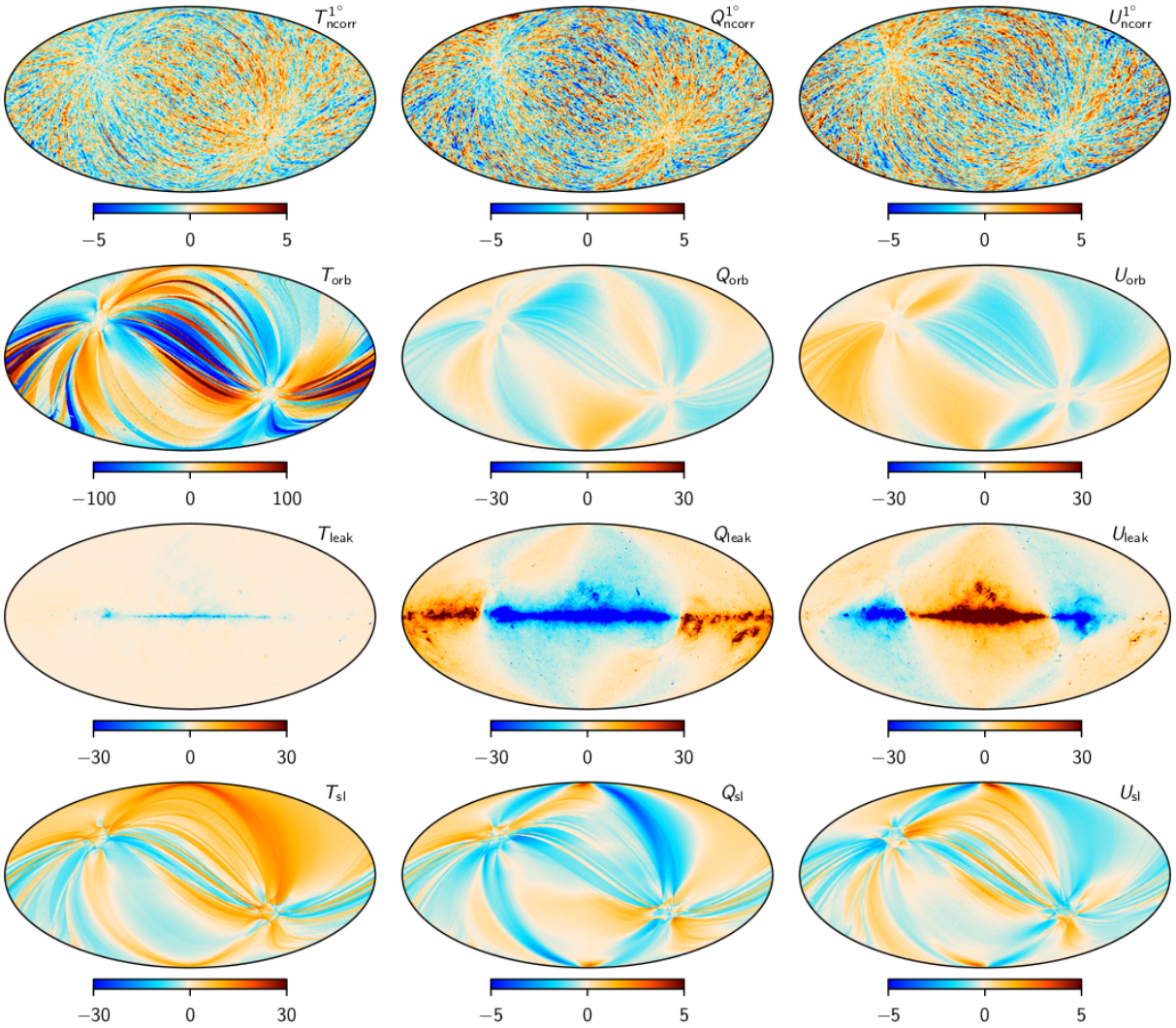

Figure 1: Examples of systematic error simulations produced by the BeyondPlanck pipeline. Columns show Stokes T, Q, and U parameters, while rows show correlated noise, orbital dipole, bandpass and beam leakage, and far-sidelobe pickup.

1 Summary

Low-level systematic error propagation and simulation is perhaps the single most fundamental and novel aspect of the BeyondPlanck pipeline, and this feeds into all aspects of the analysis. The actual instrument model adopted for Planck LFI by BeyondPlanck is described in BeyondPlanck Collaboration (2020), as well as by Ihle et al. (2020) and Gjerløw

et al. (2020). Figure 1 shows a selection of systematic effects that are accounted for in this pipeline.

The actual data products are provided in terms of a set of six BeyondPlanck chain files (given in HDF format) that are available through the project homepage (http://beyondplanck.science/products/files). Documentation is available through the same portal.

In total, 1200 full-sky realizations are provided, each with different systematic error parameters. In addition, we do provide traditional mean and standard deviation maps, but these are only intended for plotting and visualiation purposes; scientific analysis must be done with the full set of realizations, in order to propagate uncertainties properly.