Chapter 1

Conclusion

In light of the science objectives of mm-VLBI observations and software advances in the broader radio interferometry community, a mm-VLBI data simulator has been developed [Blecher et al., 2016].

Apparent in the results laid is the realisation of the design objectives laid out in **??**.

An important feature is that this simulation pipeline is performed using the MEASUREMENT SET format, in line with ALMA and future VLBI data formats. The focus has been placed on simulating realistic data given an arbitrary theoretical sky model.

A wide range of signal propagation effects can be implemented using the Measurement Equation formalism, with tropospheric scattering and antenna pointing errors given as illustrative examples. To this end, the simulator includes signal corruptions in the interstellar medium (ISM), troposphere and instrumentation. Examples of typical corruptions have been demonstrated, which show that each corruption can significantly affect the inferred scientific parameters. The ISM scattering implementation SCATTERBRANE, based on Johnson and Gwinn [2015], has been incorporated into the pipeline.

Particular focus has been placed on EHT observations, however, the pipeline is completely general with respect to observation configuration and

source structure.

Time variability in all domains (source, array, ISM, troposphere) is implemented.

Future [improvements] of MEQSILHOUETTE will include polarisation dependent corruptions.

fringe fitting variable troposphere with time variable soure

The creation of a close interface between sophisticated theoretical and interferometric mm-VLBI simulations will enhance the scientific opportunities possible with the EHT."

more collaboration and working with EHT observing groups to ran their actual data processing algorithms on. this needs a good data format converter.

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