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New minimization techniques, solvers and calibration algorithms

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Abstract content
 (Max 300 words)

The aim of the new generation of radio synthesis arrays such as Square Kilometre Array (SKA) and LOw Frequency ARray (LOFAR) is to achieve much higher sensitivity, resolution and frequency coverage than what is available now. To accomplish this goal, our project aims to develop advanced solving techniques that will focus in particular on linearized approaches such as Stefcal with extension to direction-dependent gains, direction-dependent gain solutions with coupling between directions and timeslots, solving for pointing errors and other beam parameters, Bayesian solvers; simultaneous solutions for calibration and sky model parameters. Furthermore, we provide a fundamental statistical understanding of self-calibration which is currently missing. The output of this project is a set of new solving techniques, augmented by software implementations of such. These will be tested on real data from SKA pathfinders (KAT-7 and early MeerKAT data, LOFAR, etc).

Apply to be
 considered for a student
 award (Yes / No)?

Yes

Level for award
 (Hons, MSc,
 PhD)?

PhD

Main supervisor (name and email)
and his / her institution

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Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?

No

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