

OSKAR Release Notes

1 Introduction

OSKAR 2.7.0 is the current version of the OSKAR interferometry and beamforming simulation package. The function of these release notes is to summarise changes and new features, and highlight any known issues.

2 Changes

The changes for the current release are listed below. For earlier releases please refer to older revisions of this document or the `ChangeLog.txt` file in the OSKAR source tree.

2.1 Version 2.7.0

2017-10-31 OSKAR-2.7.0

- Removed telescope longitude, latitude and altitude from settings file. These are now specified using "position.txt" in the telescope model.
- Made CUDA an optional dependency, and added option to specify whether or not to use GPUs for simulations. This makes it possible to run inside a virtual machine if necessary.
- Removed Qt dependency from all command line applications, and updated the GUI to use Qt 5.
- Changed GUI to only display settings for the selected application and to remember the last settings file used for each application.
- Added option to change current working directory from GUI.
- Removed `oskar_settings_set`, as it was unable to check whether settings were being set correctly. Settings files can now be updated using the `--set` command line option of the required application.
- Added option to specify the number of compute devices used for simulations (CPU cores and/or GPU cards).
- Added Python interface.
- Re-wrote `oskar_imager` application to allow use of multiple GPUs when using a DFT. Visibility data are now loaded in blocks to reduce memory usage.
- Added option to use a 3D DFT to make images.
- Added option to use gridding and FFT to make images that are consistent with those from CASA.
- Added option to use W-projection to make images that are consistent with those from CASA.
- Added option to use natural, radial or uniform visibility weighting when making images.
- Added option to imager to filter input by UV baseline length, in wavelengths.
- Fix to ensure pixel coordinates are consistent between the DFT and FFT algorithms.
- Added options to specify grid kernel parameters.
- Added option to perform imaging in single or double precision, regardless of the precision of the input data.

- Added capability to use multiple visibility files as input to the imager, with option to scale image normalisation accordingly.
- Allowed visibility data to be read from a specified column of a Measurement Set.
- Allowed negative source fluxes.
- Allowed FITS images to be read if they have a diagonal CD matrix instead of CDELTA* values.

3 Roadmap

We hope to add the following capabilities to OSKAR at some point. In no particular order:

- Allow use of analytical and numerical dish patterns.
- Swap X and Y dipoles to match IAU polarisation axes on the sky.
- Allow full 3D specification of individual element feed angles.
- Allow full Stokes beam patterns.
- Include a usable ionospheric model.

4 Known Issues

While every effort has been made to identify and fix problems through extensive testing, some will undoubtedly remain. Please report any issues you find to oskar@oerc.ox.ac.uk and include a description of the problem, your terminal output, your version of OSKAR, and details of your operating system and hardware configuration. If necessary, we may also require settings and/or data files to replicate the problem.