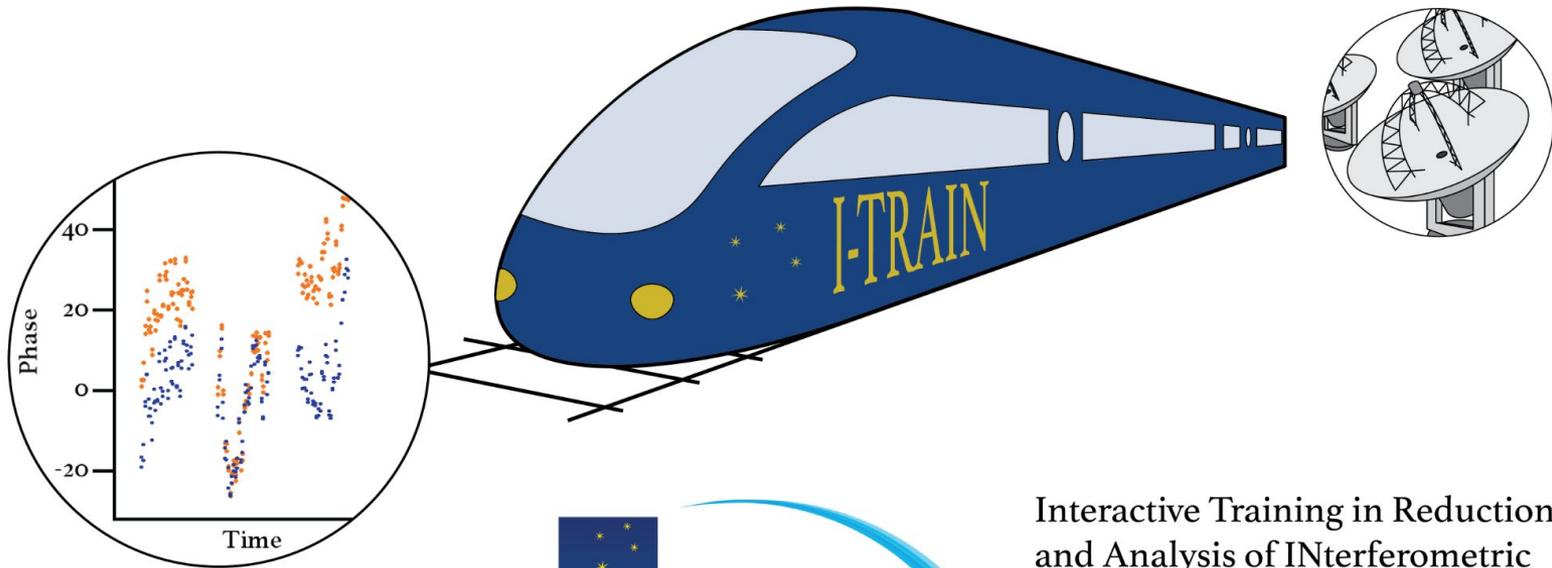


# #6. Improving image fidelity through self-calibration



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Interactive Training in Reduction and Analysis of INterferometric data with the European ARC network

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# Requirements

The training session will focus on how to improve image fidelity through self-calibration. To follow the tutorial we recommend the following:

- To be familiar with general imaging concepts and imaging in CASA
  - Install **CASA**:
    - CASA versions  $\geq 5.6.X$  or CASA 6.1.X are preferred  
(Note: CASA versions  $\geq 5.4$  may work but have not been tested for this tutorial)  
(Note: Mac OSX users should **avoid updating to macOS Big Sur**)
  - Download the training materials: **1.8 GB** size → *Allow for plenty of time if you are on a wireless*
- [Link to Tutorial Data](#)
- Allow for a minimum of empty space in your computer of **~6 GB** (materials size + size of the output of the exercise)
  - Run the first two steps of the tutorial script to check your CASA installation and become familiar with the data.

*The next slides will provide you with instructions to fulfil the list of requirements*

# INSTRUCTIONS

The next steps will guide you to fulfil the requirements for this training session:

1. [Basic skills](#)
2. [CASA](#)
3. [Dataset and disk space](#)
4. [Run first two steps in script to check your CASA installation and tutorial dataset](#)
5. [Final checklist](#)

*Contact us at [contact@nordic-alma.se](mailto:contact@nordic-alma.se) if you encounter any issues*

# 3. Dataset and disk space

- Check you have a minimum of empty space in your computer:  
Minimum disk space required: ~**6 GB** (dataset after untar + output of the exercise)
- Download training materials: ~ **1.8 GB** size → **Allow plenty of time if you are on a wireless**

[Link to Tutorial Data](#)

- Download python scripts and tar files. Extract the tar file containing the measurement set:

```
tar -xvf X1de2_VCMa_325.ms.tar.gz
```

It will place the tutorial dataset in that location; you can delete the tar.gz file.



# 4. Run first two steps in script to check your CASA installation and tutorial dataset

The script used in this tutorial is organized in steps. To check your CASA installation we will run the first two steps of the script:

1. Launch CASA from your Applications icon or from the terminal with `casapy` or `casa`:

```
casapy
```

# depends on your alias setup

2. In the CASA terminal, define the variable `mysteps` including steps 0 and 1 as follows:

```
mysteps=[0,1]
```

3. Execute the tutorial script corresponding to your CASA version, eg for CASA 6:

```
execfile('itrain-selfcal.py')
```

```
CASA <1>: mysteps=[0,1]
CASA <2>: execfile('itrain-selfcal.py')
List of steps to be executed ... [0, 1]
Step 0 List the data set and plot antennas and visibility spectrum
```

This will generate a `*listobs.txt` file and `*.png` figures that you can check to familiarize yourself with the tutorial dataset. To have a first insight on the tutorial script, you can search for the variable `step_title` that holds all the steps executed by the script.



# 5. Final checklist

You should be able to tick on all the boxes in the list of requirements. You are/have:

- Familiar with general imaging concepts and imaging in CASA
- Installed **CASA**
  - CASA versions 5.6.X or 6.1.X are preferred
  - (Note: CASA versions  $\geq 5.4$  may work but have not been tested for this tutorial)
- Downloaded the training materials ~**1.8 GB** size
  - [Link to Tutorial Data](#)
- Allowed for empty space in your computer: ~**6 GB** (materials size + size of output of the exercise)
- Ran the first two steps of the tutorial script to check your CASA installation and become familiar with the data.



you are ready

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