

Interferometry has been widely used, especially at radio wavelengths, to indirectly reconstruct scientifically exploitable images of the sky through a discrete sampling of its Fourier transform. Formulated as an inverse problem, it constitutes a relevant application case for sparse reconstruction. In the first part of this course, we will introduce the basics of radio-astronomy, radio interferometry and the classical methods of reconstruction/deconvolution of images from interferometric data.

In the second part, we will show how sparse reconstruction methods are relevant for radio-interferometry by presenting the current implementations and results obtained (particularly, with in-painting).

The successful application of these methods is a decisive challenge in the scope of the current and future "new generation" radio interferometers such as LOFAR, SKA or ALMA."