Imaging 100 000 channels with ALMA & NOEMA
The IMAGER program in GILDAS

S. Guilloteau, E. Chapillon, E. Di Folco & T. Jacq

(LAB/OASU, *IMAGER was developed as part of the INSU SNO ALMA/IRAM*)

Abstract

IMAGER is an interferometric imaging package in the GILDAS environment, tailored for usage simplicity and efficiency for multi-spectral data sets. It is optimized for ALMA and NOEMA data sets. Efficiency is obtained through Parallel programming and extensive use of Memory. IMAGER comes with a powerful PIPELINE, which simplifies mutliple spectral line processing. IMAGER is distributed as a standalone precompiled LINUX container, and also available as a « contrib » package with GILDAS.

IMAGER Features

Designed for speed and simplicity

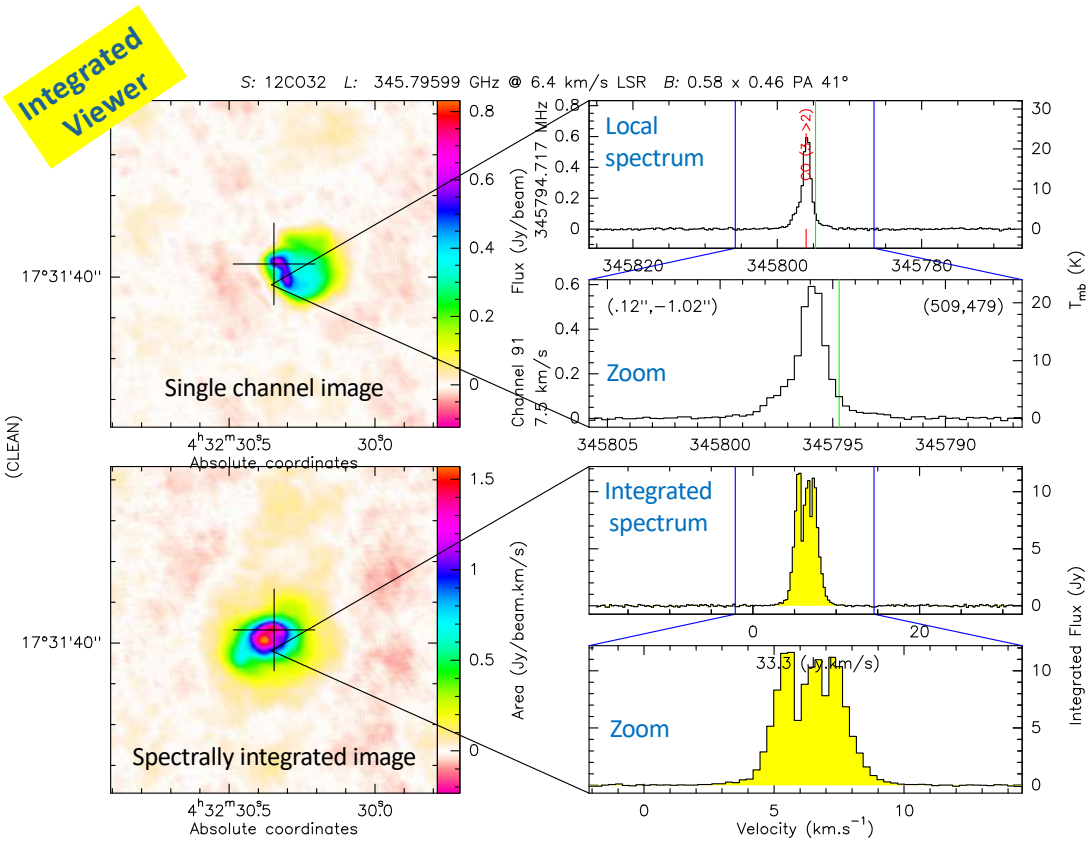
- **User friendly**
- **Integrated viewer**
- **Automation** with sensible defaults
- Automatic spectral line identification
- **Fast**: parallelization, limited I/O
- **Fully documented**:
  HELP, WebSite, demos and video tutorials

IMAGER Concept: 7 basic commands

Treats Single-fields or Mosaics alike

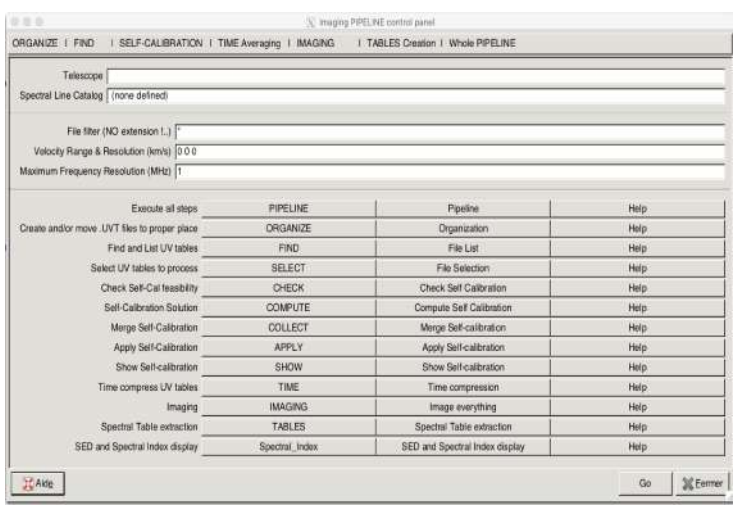
READ	read your data only once
(UV_SHORT)	short-spacings inclusion (if needed)
SELFCAL	(self-calibration, if possible and needed)
UV_MAP	imaging
CLEAN	deconvolution
VIEW	synthetic visualization
WRITE	save your result only when satisfied

Integrated Viewer

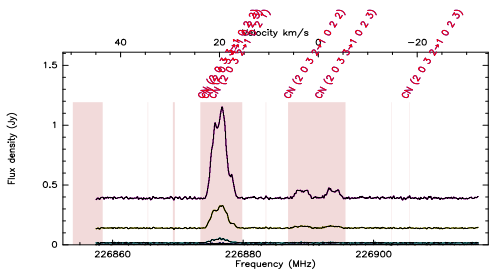


The automatic PIPELINE

- Easy data import from CASA (casagildas() tool) and CLIC (@ all-tables)
- 1 command for all spectral windows: **PIPELINE**
  - Derives and **applies Self-calibration**
  - **4 pipeline MODES**: Continuum, Survey, All, Split
  - **Identifies spectral lines** from a user-defined Catalogue
  - **Modes All and Split** extract channels around identified spectral lines
- Easy control from the **Widget**
- **Dazzling fast**: a full track from NOEMA / PolyFIX in < 5 min



Fast preview with line identification



Line
Continuum
separation

IMAGER Capabilities

Imaging

- **UV_MAP** Basic dirty image construction
- **CLEAN** Deconvolution (Cleaning) tools
- **SELFCAL** Self calibration
- **UV_SHORT** Short-spacings inclusion in UV data

Integrated Viewer

- Offers a **synthetic view**
- Can also **Compare 2 data cubes or maps** side by side

UV_Handling

- **UV-oriented commands** to handle UV data
  time averaging, spectral resampling, line and continuum identification and separation, flagging, re-weighting, azimuthal averaging, etc.

MAP_Handling

- **Image-oriented commands** to resample (in frequency), to compress (by channels), to compute integrated intensity maps, etc.

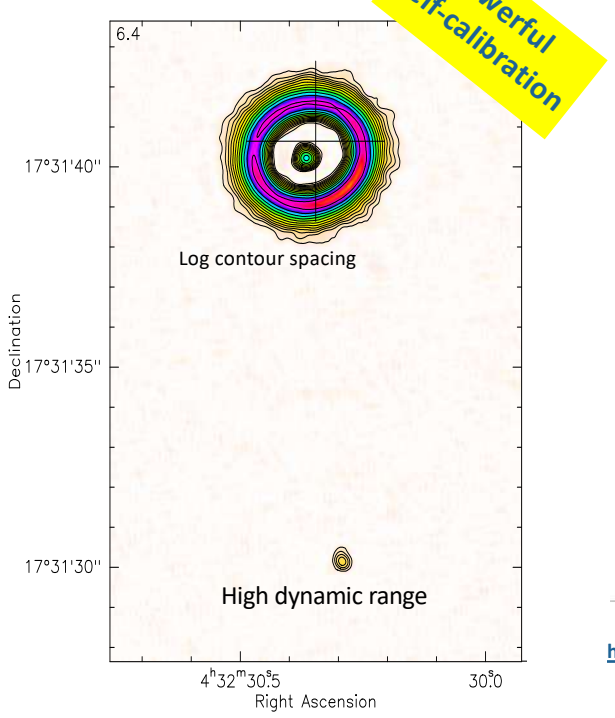
Spectral Lines identification: CATALOG command

PIPELINE

HOW_TO

- IMAGER has an "HOW TO" facility, where simple questions can be typed, and answers are searched for in a (small) database.

Powerful Self-calibration



SCAN ME

https://imager.oasu.u-bordeaux.fr