

GILDAS

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IRAM & Obs. de Paris

6th IRAM Millimeter Interferometry School
Oct. 6 - Oct. 10 2008, Grenoble

Scope: I. Softwares at IRAM

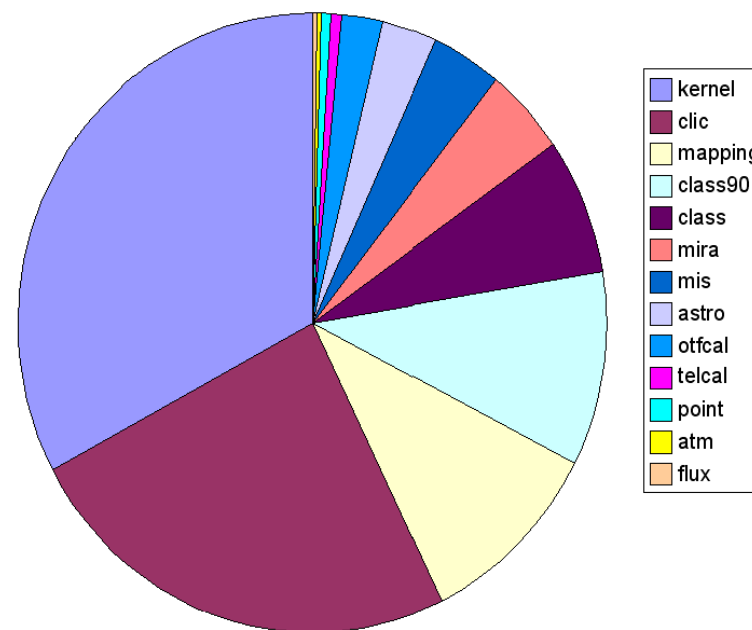
- Many different kinds of softwares at IRAM:
 1. Proposal and scheduling (statistics, dynamic scheduling, pool observing).
 2. Preparation of observations, *e.g.* setups.
 3. Data acquisition:
 - 3.1 Low level, *e.g.* hardware control (antennae, receivers, correlators, etc...)
 - 3.2 High level, *e.g.* operator and observer interface.
 4. Data archiving.
 5. Data reduction and analysis (single dish + interferometry).
 6. Generic plot package.
- GILDAS deals only with a subset. Points: 2, 3.2, 5 and 6.

Scope: II. GILDAS at IRAM

425 000 executable lines (800 000 with MOPSIC)

- Common facilities
 - Command line interpreter: **SIC**;
 - Graphical possibilities: **GREG**
(1D: curves, 2D: images, 3D: spectra cubes).
 - Preparation of observations: **ASTRO, MOPSIC**.
- 30m
 - Bolometer + Monitoring: **MOPSIC**;
 - Spectroscopy: **TELCAL + MIRA + CLASS**.
- PdBI
 - Calibration: **CLIC**;
 - Imaging + Deconvolution: **MAPPING**.
- ALMA
 - Simulator: **MAPPING @ alma.map**;
 - Holographies of ALMA antennae are done in **CLIC** at San Pedro.

Gildas packages



GILDAS Strengths

- Large range of supported systems: Linux, Mac/OSX, Windows.
- Light weight: Data reduction and analysis possible on laptops.
- 25 years of history
 - ⇒ Accumulated expertise.
- Powerful advanced tools, e.g.
 - Easy OTF processing;
 - Easy interferometric mosaicing;
 - General fitting routines.

GILDAS users

- IRAM AODs: Instrument monitoring, data pipelining.
 - IRAM users: Data reduction.
 - Others:
 - JMMC/ASPRO tool is based on GILDAS libraries;
 - CLASS is used in many facilities (e.g. APEX, CSO, NANTEN2, GBT, HHT, Effelsberg, Kosma, ...); CLASS is considered for use by Herschel/HIFI, SOFIA, 45m.
 - ALMA: (Single Dish characterization in San Pedro).
- ⇒ GILDAS evolutions must be thought with all users in mind.

GILDAS Manpower

- People participating in one way or another

IRAM/Grenoble R. Zylka, J.M. Winters, N. Rodriguez-Fernandez, E. Reynier, V. Pietu, J. Pety, R. Neri, R. Lucas, F. Gueth, A. Castro-Carrizo, M. Bremer, J. Boissier, S. Bardeau.

IRAM/Granada H. Wiesemeyer, H. Ungerechts, A. Sievers.

LAOG/Grenoble P. Hily-Blant.

L3AB/Bordeaux S. Guilloteau.

- Large code contributors:

R. Zylka MOPSIC.

H. Wiesemeyer MIRA + TELCAL.

E. Reynier kernel.

V. Pietu CLIC.

J. Pety kernel + TELCAL + CLASS + ASTRO + MAPPING.

F. Gueth CLIC + ASTRO.

S. Bardeau kernel (python binding) + CLASS.

P. Hily-Blant CLASS.

S. Guilloteau Kernel + CLASS + MAPPING.

- Research & Development:

N. Rodriguez-Fernandez PdBI OTF.

User support:

I. Documentation

i

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MAPPING

A GILDAS software

March 29th, 2007

Version 2.0

Questions? Comments? Bug reports? Mail to: gildas@iram.fr

The GILDAS team welcomes an acknowledgment in publications using GILDAS software to reduce and/or analyze data. Please use the following reference in your publications:

<http://www.iram.fr/IRAMFR/GILDAS>

Documentation

In charge: J. Pety^{1,2}.

Active developers: N. Rodriguez-Fernandez¹, S. Guilloteau³.

Main past contributors: R. Lucas, K. Bouyoucef.

Software

In charge: J. Pety^{1,2}.

Active developers: S. Guilloteau³, F. Gueth¹, N. Rodriguez-Fernandez¹.

Main past contributors: R. Lucas, K. Bouyoucef.

1. IRAM
2. Observatoire de Paris
3. Observatoire de Bordeaux

Related information is available in:

- IRAM Plateau de Bure Interferometer: Introduction
- IRAM Plateau de Bure Interferometer: OBS Users Guide
- IRAM Plateau de Bure Interferometer: Atmospheric Calibration
- IRAM Plateau de Bure Interferometer: Calibration Cookbook
- CLIC: Continuum and Line Interferometric Calibration
- MIS: Millimeter Interferometry Simulation Tools
- GREG: Graphical Possibilities
- SIC: Command Line Interpreter

IRAM Plateau de Bure Interferometer Data Reduction Cookbook

September 1st, 2008

Version 4.0

This document describes how to reduce Plateau de Bure (PdB) observations and gives some ideas to perform first analysis and imaging. Sect. [1](#) explains how to get started, from planning your trip to Grenoble to having a project account. The standard procedure to calibrate PdB data with the CLIC software package is described in Sect. [2](#). A few instructions to start the data analysis with the MAPPING software package are given in Sect. [3](#). In Sect. [A](#) a theoretical description of the calibration is annexed.

Documentation

In charge: A. Castro-Carrizo¹ – PdB Science Operations Group.

Main past contributors: S. Guilloteau, R. Lucas, A. Dutrey, and S. Radford.

1. IRAM

Related information is available in:

- IRAM Plateau de Bure Interferometer: Introduction
- IRAM Plateau de Bure Interferometer: OBS Users Guide
- IRAM Plateau de Bure Interferometer: Atmospheric Calibration
- CLIC: Continuum and Line Interferometric Calibration
- MAPPING: Imaging and Deconvolution of Aperture Synthesis Data
- MIS: Millimeter Interferometry Simulation Tools
- GREG: Graphical Possibilities
- SIC: Command Line Interpreter

User support:

II. Web page <http://www.iram.fr/IRAMFR/GILDAS>

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- [Documentation \(09-apr-08\)](#)
- [Current Status \(30-jul-07\)](#)
- [News \(09-jun-08\)](#)
- [Supported systems \(30-jul-07\)](#)
- [Dependencies \(30-jul-07\)](#)
- [Download \(09-apr-08\)](#)
- [Developers' corner \(30-jul-07\)](#)
- [Credits/Responsibilities \(31-jan-08\)](#)
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Questions?
Comments?
Bug reports?
Mail to:
gildas@iram.fr

Page maintained
by *J.Pety*
Last modified on:

Terminé

INTRODUCTION

GILDAS is a collection of [state-of-the-art](#) softwares oriented toward (sub-)millimeter radioastronomical applications (either single-dish or interferometer). It is daily used to reduce all data acquired with the [IRAM 30M](#) telescope and Plateau de Bure Interferometer [PDBI](#) (except VLBI observations). GILDAS is easily extensible. GILDAS is written in Fortran-90, with a few parts in C/C++ (mainly keyboard interaction, plotting, widgets).

ACKNOWLEDGMENT IN PUBLICATIONS

The [GILDAS](#) team welcomes an acknowledgment in publications using GILDAS software to reduce and/or analyze data.

Please use the following reference in your publications: <http://www.iram.fr/IRAMFR/GILDAS>

RECENT MILESTONES

([detailed news here](#))

nov-08
CLASS spectra writing was considerably optimized for data files containing more than 100000 spectra.

jul-08
The FITS command now knows how to handle the CDi_j FITS keyword for rotated images. It also knows again how to read AIPS UVFITS data.

jun-08
There is a new [binary version](#) of [GILDAS](#) under Intel Mac. Gildas is now also available in [Fink](#).

mar-08
There is a new [binary version](#) of [GILDAS](#) under WINDOWS.

feb-08
[CLASS90](#) is now the default version of [CLASS](#). Although still distributed in [GILDAS](#), [CLASS77](#) is now obsolescent, *i.e.* not maintained anymore. Reminder: [CLASS90](#) has all the [CLASS77](#) possibilities, plus a much improved On-The-Fly support (see [IRAM memo 2005-1](#)).

dec-07
GAUSSCLUMP is now part of the standard [GILDAS](#) compilation.

nov-07
Major overhaul of the gildas building system.

oct-07
[ASTRO](#) has been adapted to support the new 2mm receivers for Plateau de Bure Interferometer.

jul-07
[MIRA](#) is now shipped with [GILDAS](#).

jun-07
First release of a stable [CLIC](#) version tailored for the new generation of receivers at bure.

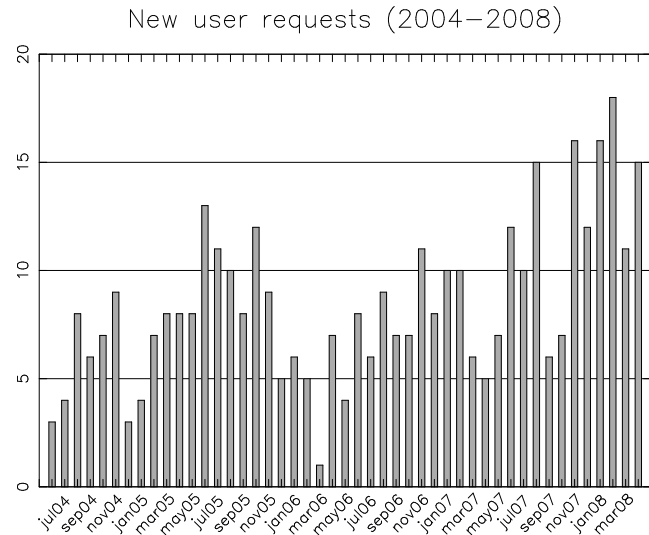
may-07
A fully new user interface for [MAPPING](#).

apr-07
A fully new (POSIX compliant) interprocess communication for [GILDAS](#).

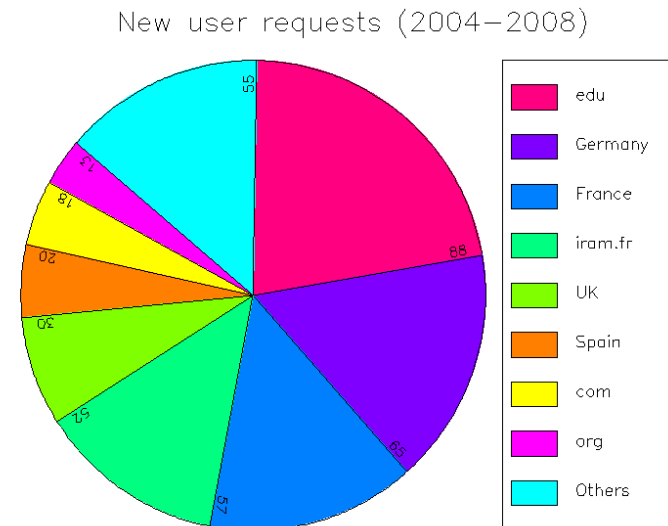
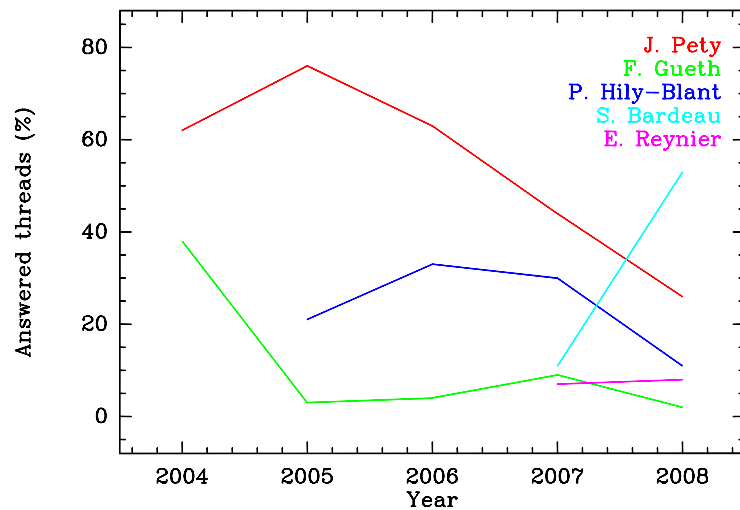
mar-07

User support:

III. answers to gildas@iram.fr



- Total number of threads: 398.
- Median time to
 - First answer: 11h;
 - Final answer: 32h.



Naive thoughts about interoperability

- No software is **the** answer to all these:
 - Best (*i.e.* most recent) computing technology.
 - Best portability.
 - Best speed.
 - Best ease of use (CLI and GUI).
 - Best (*i.e.* shortest) learning curve.
 - Best functionalities.
 - * Best data calibration methods.
 - * Best data mapping methods.
 - * Best (*i.e.* most complete) analysis methods.
 - * Best graphical possibilities.
 - Best cost.
- One possible answer: **Interoperability**
 - Tight (Microsoft view): Everybody develops in the same framework.
 - Lose (Linux view): One common exchange data format, every packages input/output this format ⇒ Best reuse of all the existing tools.

Future Prospects

- Strategy: Maintain high-quality software for IRAM instruments while staying open to outside world.
 - Focused but generic developments;
 - In/out fillers;
 - Python binding.