

Glen Petitpas, Ph.D.

Science Operations Specialist, Astronomer, Computer Engineer

Submillimeter Array Project

Center for Astrophysics | Harvard & Smithsonian

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Professional Summary:

I am a hard-working, versatile Ph.D. astronomer with a long background in managing and optimizing science operations, pipelined assessment of data quality, supervising telescope staff, and calibrating and imaging radio interferometry data. I manage and develop software to streamline telescope operations from the proposal stage, through the observing stage, all the way to quality assessment and data distribution.

Work Experience:

2014-present: Astronomer, Computer Engineer

Center for Astrophysics | Harvard & Smithsonian

Cambridge MA

Duties:

- I perform nightly assessment of data quality and act as part-time scheduler of nightly science operations. As assessor, I analyze the output from my quick look pipeline and give each night's observation a pass, fail, or partial fail grade. As scheduler, I schedule nightly science observations (with timelines accurate to within a few minutes).
- I am the triggered observation scheduler, with the responsibility of assessing fast-response observing requests and determining whether or not to interrupt active science observations.
- I manage and upgrade the Submillimeter Array Observer Center (OC) which is a suite of web-based HTTP/Perl/PHP/SQL tools that perform all SMA-related tasks from the proposal stage (submission, TAC evaluation and time allocation) to observation management (observing script preparation, science and technical scheduling, observing report logging, engineering work logs), to data assessment and distribution (data quality checks, communicating with PIs, archive ingestion). I regularly work to improve and upgrade the OC software as new instrumental capabilities and observing modes become available.
- I am responsible for managing the SQL based project and user databases.
- I work closely with the Radio Telescope Data Center to allow easy access to observing reports and the data archive from OC as well as better incorporation of meta-data in the archive.
- I undertake an independent research program, focusing primarily on the interstellar medium in nearby and high redshift galaxies.
- I am the fast-response data calibration expert for triggered (ToO) observations who need immediate feedback while studying time dependent phenomena.
- I was briefly and unexpectedly placed in charge of the Radio Telescope Data Center (RTDC) archive and was tasked with reverse engineering the entire SMA data archive process and

ensure it was running and back-populated again within 2 weeks. I subsequently trained the incoming RTDC staff and was able suggest revisions to fix several of the shortcomings I discovered along the way.

- I oversee the data calibration and distribution for two large scale SMA projects which have combined been awarded over 1000 hours of observation. As a result of my participation in these projects, I have personally provided science quality images for these and other projects totaling almost 800 nights of observing.
- I am well versed in the latest radio interferometry data calibration/imaging methods and software.

2007-2014: Astronomer, Scheduler, Computer Engineer

Submillimeter Array, Smithsonian Astrophysical Observatory
Hilo HI

Duties:

- I was supervisor of nighttime operations, including scheduling and quality assessment of nightly science operations.
- I worked closely with engineers to optimize the scheduling of daytime maintenance and upgrade activities to reduce the impact on nightly science operations.
- I created, maintained and expanded a web based “observing script generator” which aids astronomers in preparing observing scripts for the SMA and allows simulated observations of the script prior to submission.
- I developed a “quick look” data pipeline to aid in quickly assessing data quality and allow engineers to look for issues with the telescope.
- I supervised the telescope operators and was in charge of their hiring, performance evaluations, timesheets, training, advancement and exit interviews. The operators time included office based hours for which I was responsible for creating work plans and assigning duties e.g. writing and testing telescope control and quality assessment software.
- I spearheaded a software upgrade program where I had my team of operators undertaking a number of observing script improvements e.g. tracking and handling of mosaicking and/or multiple LST target observations, and an observing script restart method that allows an observing script to resume where it left off after a stoppage (planned or unexpected).
- My team was also responsible for public outreach, representing the SMA at a wide variety of local events and national meetings.
- I have given many public lectures at the University of Hawai’I and `Imiloa Planetarium to promote the SMA, and astronomy in general, within the local community.
- I ran my own independent research program, focusing primarily on nearby galaxies, but collaborating on a wide variety of topics including high redshift galaxies and gamma ray burst (GRB) afterglows.
- I led the scheduling, observations, and fast-response data reduction of triggered (ToO) observations (such as supernovae, GRB follow-up, etc.) and was responsible for jump-starting the SMA’s growing role in time-domain astronomy. The current record from trigger to on-source observations is 7 minutes.

2004-2007: SMA Fellow

Submillimeter Array, Smithsonian Astrophysical Observatory
Hilo HI

Duties:

- I undertook an independent research program using the Submillimeter Array (supervisor Dr. Paul Ho).
- I was responsible for routinely operating the telescope from the 14000' summit, requiring knowledge of high-altitude work and safety protocols.

2001-2004: BIMA Fellow, University of Maryland

University of Maryland
College Park, MD

Duties:

- I undertook an independent research program using the Berkeley-Illinois-Maryland Association Array (supervisor Dr. Stuart Vogel).
- I helped derive efficient interferometric array configurations which minimized construction costs (minimal roads, maximal telescope pad reuse; supervisor Tony Beasley).

Education:**1997-2001: Ph.D. (Astronomy) McMaster University**

Hamilton, Ontario, Canada
Dr. Christine D. Wilson, advisor

1995-1997: M.Sc. (Astronomy) McMaster University

Hamilton, Ontario, Canada
Dr. Christine D. Wilson, advisor

1991-1995: B.Sc. (Honours Astrophysics) Saint Mary's University

Halifax, Nova Scotia Canada
Dr. David A. Clarke, advisor

Computer Skills:

Languages: Expert: Perl, PHP, HTML, Fortran
Beginner/intermediate: Python, C/C+, JavaScript

Databases: Expert: SQL (MySQL, SQLite)

OS: Linux (advanced usage and system administration)
UNIX (advanced usage and system administration)
Windows (advanced usage and system administration)
MacOS (advanced usage)

Data Packages: CASA, IDL, MIRIAD, Starlink, VISTA, IRAF

Version control: Git/GitHub

Bug Tracking: OpenProject

Words: TeX, LaTeX, Word, OpenOffice

Graphics: Gimp, Adobe Photoshop, Adobe Illustrator

Presentations: Microsoft PowerPoint, HTML

Professional Service:

- Submillimeter Array Time Allocation Committee (2016-present)
- SMA Fellowship Search Committee (2014-present)
- Referee for Astrophysical Journal and Astronomy & Astrophysics.

Research:

My field of research is primarily the interstellar medium in nearby and high redshift galaxies. Lately I have been growing more involved with time domain astronomy as my role as scheduler has allowed me access to a variety of projects requiring fast trigger response time at the SMA.

I am first author/co-author on 8/74 refereed papers and 22/49 un-refereed papers (153 total) with an H-index of 39. Below are the 5 most recent:

"Luminous Millimeter, Radio, and X-Ray Emission from ZTF 20acigmel (AT 2020xnd)", Ho, A.Y.Q., Margalit, B., Bremer, M., Perley, D.A., Yao, Y., Dobie, D., Kaplan, D.L., et al., 2022, ApJ, 932, 116

"Simultaneous Deep Measurements of CO Isotopologues and Dust Emission in Giant Molecular Clouds in the Andromeda Galaxy", Viaene, S., Forbrich, J., Lada, C. J., Petitpas, G., & Faesi, C., 2021, ApJ, 912, 68

"The nature of 500 micron risers I: SMA observations", Greenslade, J., Clements, D. L., Petitpas, G., Asboth, V., Conley, A., Pérez-Fournon, I., & Riechers, D., 2020, MNRAS, 496, 2315

"Two-component Jets of GRB 160623A as Shocked Jet Cocoon Afterglow", Chen, W. J., Urata, Y., Huang, K., Takahashi, S., Petitpas, G., & Asada, K., 2020, ApJL, 891, L15

"First Resolved Dust Continuum Measurements of Individual Giant Molecular Clouds in the Andromeda Galaxy", Forbrich, J., Lada, C. J., Viaene, S., & Petitpas, G., 2020, ApJ, 890, 42

Link to my complete list of my publications on ADS:

[https://ui.adsabs.harvard.edu/search/filter+author+facet+hier+fq+author=NOT&filter+author+facet+hier+fq+author=\(%3A%20NOT%20author+facet+hier%3A%221%2FPetitpas%2C%20G%2FPetitpas%2C%20Guillaume%22\)&filter+author+facet+hier+fq+author=author+facet+hier%3A%221%2FPetitpas%2C%20G%2FPetitpas%2C%20G%20%20B%22&fq=%7B!type%3Daqp%20v%3D%24fq+author%7D&fq+author=\(%3A%20NOT%20author+facet+hier%3A%221%2FPetitpas%2C%20G%2FPetitpas%2C%20Guillaume%22\)%20NOT%20author+facet+hier%3A%221%2FPetitpas%2C%20G%2FPetitpas%2C%20G%20%20B%22\)&p=0&q=%20author%3A%22Glen%20Petitpas%22%20author%3A%22G.%20Petitpas%22%20author%3A%22G.R.%20Petitpas%22%20author%3A%22G.%20R.%20Petitpas%22%20author%3A%22Glen%20R.%20Petitpas%22&sort=date%20desc%2C%20bibcode%20desc](https://ui.adsabs.harvard.edu/search/filter+author+facet+hier+fq+author=NOT&filter+author+facet+hier+fq+author=(%3A%20NOT%20author+facet+hier%3A%221%2FPetitpas%2C%20G%2FPetitpas%2C%20Guillaume%22)&filter+author+facet+hier+fq+author=author+facet+hier%3A%221%2FPetitpas%2C%20G%2FPetitpas%2C%20G%20%20B%22&fq=%7B!type%3Daqp%20v%3D%24fq+author%7D&fq+author=(%3A%20NOT%20author+facet+hier%3A%221%2FPetitpas%2C%20G%2FPetitpas%2C%20Guillaume%22)%20NOT%20author+facet+hier%3A%221%2FPetitpas%2C%20G%2FPetitpas%2C%20G%20%20B%22)&p=0&q=%20author%3A%22Glen%20Petitpas%22%20author%3A%22G.%20Petitpas%22%20author%3A%22G.R.%20Petitpas%22%20author%3A%22G.%20R.%20Petitpas%22%20author%3A%22Glen%20R.%20Petitpas%22&sort=date%20desc%2C%20bibcode%20desc)

References:

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Rob Christensen (Lead Engineer, SMA Hawai'i)

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Phone: 808 961 2928