JCMT Observatory Update 2019 JCMT Users Meeting

Image credit: Jason Fleck



Sub-mm science Maunakea



The Black Hole Image Pōwehi



The Black Hole Image Pōwehi





EAO staff are now gearing up for the 2020 EHT campaign.

JCMT and SMA staff celebrate the Black Hole image achievement



EHT Collaboration wins the 2020 Breakthrough award

Award recognizes JCMT and SMA staff.



Credit: Fumie Tazaki

Event Horizon Telescope Collaboration



Brightest sub-mm flare event



Mairs et al. 2019: https://ui.adsabs.harvard.edu/abs/2018arXiv181200016M/abstract

PI Queue and 20A Call



The JCMT Time Allocation Committee (TAC) will meet and review all 20A proposals in Hilo, Hawaii, November 16-18 2019

Large Program Queue and Call

The 20A Call for Large Programs



The JCMT board will meet to review all Large Programs (existing and requested) November 19/20, Hilo, Hawaii

Large Program Queue and Call

The Status of Current Programs

Completed: S2COSMOS, SCOPE, MALATANG & BISTRO



Large Programs Publications: <u>https://ui.adsabs.harvard.edu/public-libraries/</u> gd1aj27oTHWBRaYWmeX-YA

Maunakea Restricted Access

Restricted access caused JCMT to be closed for a total of 27 nights (2019/06/16 - 2019/08/12).

- Nāmanaknui is the spare receiver for the GLT. It was built by, and is on loan from, ASIAA.
 - `Ala`ihi = Band 3 = 86GHz
 - $\overline{U}\overline{u} = Band 6 = 230GHz$
 - `Āweoweo = Band 7 = 345GHz
- Nāmanakui arrived in Hilo: 2019/07/22





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- `Ū`ū first light: **12CO of CRL2688 2019/10/05**



 Ū`ū:
 One polarization channel has been lost and so time estimates should be doubled to compensate for the loss in expected sensitivity.

Only 2 sub-bands are available for use at this moment

Right now we are working on tuning and amplitude issues.



NESS raster observation 2019/11/01



Work is ongoing to ensure JCMT is ready for the next EHT run in 2020 and an East Asian VLBI run

SMA fringe testing upcoming with Nāmanakui at 230GHz.

Hardware currently needed for 86GHz and 345GHz: relay mirror (345GHz) and wave plate (86GHz)

325 – 375 GHz 16 detector SSB SIS array receiver

HARP

- Vacuum issues in early 2019, HARP warmed up July 28th,
- During warm up the LO window imploded
- New LO window Cardiff University
- New mixers ASIAA
- 3 of the 16 HARP mixers blocks were replaced (H04, H13 and H14)
- HARP at operational temperature once more 2019/10/08







Above: HARP on the right Nasmyth platform. Far left: the MLI provided protection when the HARP LO had issues. Left: checking out the inside of HARP after the LO failure.

325 – 375 GHz 16 detector SSB SIS array receiver

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HARP Current Status

HARP pre summer 2019 work



- H15 H08 H07 X H09 H06 H01 H13 H10 H05 H02 H12 H11 H04 H03 L12 H11 H04 H03 H12 H11 H04 H03 H12 H11 H04 H03
- H04, H13 and H14 mixers were replaced
- H00 and H14 remain with no LO power
- Receptor H13 is now operational
- H04 no longer seeing oscillations below 332 GHz
- H05 remains our pointing receptor

SCUBA-2 & POL-2



hours spent over the past six month period (April - September 2019) in various weather Grades by instrument.

SCUBA-2/POL-2 Continues to work well and produce fantastic science.

POL-2 now commissioned at 450micron

Calibration updates have almost been finalized and should be realized in the next Starlink update with a publication out soon.



Future instrumentation



meeting webpages: <u>www.eaobservatory.org/jcmt/science/futures-2019/</u> wiki pages: <u>www.eao.hawaii.edu/EAO-Futures-Discussion-2019/</u>

Future instrumentation



New 850 micron camera for JCMT



• 12' FOV

- 3,636 pixels (7,272 detectors)
- Each pixel is comprised of two detectors, that measure orthogonal linear polarization
- On Sky October 2022

Guaranteed mapping speed	10x compact ¹ , 10x large ²	20x for polarimetry mapping
increase	maps	
Aspirational mapping speed	20x large maps	40x for large polarimetry
increase		maps

Future instrumentation: White Papers

www.eaobservatory.org/jcmt/instrumentation/continuum/

EAO SUBMILLIMETRE FUTURES PAPER SERIES, 2019

The East Asian Observatory* James Clerk Maxwell Telescope 660 N. A*ohökü Place, Hilo, Hawai*i, USA, 96720

1 About This Series

SUBMILLIMETRE TRANSIENT SCIENCE IN THE NEXT DECADE

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1 Introduction

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Submillimetre astronomy is an active and burgeoning field that is poised to answer some of the most pressing open questions about the universe. The James Clerk Maxwell Telescope, operated by the East Asian Observatory, is at the forefront of discovery as it is the largest single-dish submillimetre telescope in the world. Situated at an altitude of 4.092 metres on Maunakea, Hawai'i, USA, the facility capitalises on the 850 µm observing window that offers crucial insights into the cold dust that forms stars and galaxies. In 1997, the Submillimetre Common User Bolometer Array (SCUBA) was commissioned, allowing astronomers to detect the furthest galaxies ever recorded (so-called

GALACTIC CONTINUUM SURVEYS WITH THE NEW 850 up. MKID CAMERA AT THE EAD/ICMT 15-M TELESCOPE.

EAO RESIDENCES FOR DRIVE 2018

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MAGNETIC FIELDS STUDIES IN THE NEXT DECADE.

EAO SUBBLIDETER PUTURE DATA SER 43, 2017

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1 Introduction

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SUBMILLIMETER GALAXY STUDIES IN THE NEXT DECADE.

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Remote Operations

A new era for the JCMT



The last summit shift at the JCMT - NESS observers Sascha Zeegers and Chris Clark along with telescope operator Jim Hoge.

Remote Operations

A new era for JCMT users: 2019/11/01





New flex email to alert users of data collection

The JCMT operator accepted an MSB (title=NGC2071) from your project M16AL001 tonight (2019-11-01). If you want to follow tonight's observing, please go to the remote eavesdropping link in your OMP project page at <u>http://omp.eao.hawaii.edu/cgi-bin/utprojlog.pl?urlprojid=M16AL001&utdate=2019-11-01</u>. You should be sent a summary of all of your observations taken tonight within 24 hours of the end of shift.

Remote Operations

End of an era as long time telescope operator Jim retires



START DATE with Joint Astronomy Centre 15 MAY 2000 End Date with East Asian Observatory 01 NOVEMBER 2019

Total: 19 Years, 170 Days More than 2,300 nights observing on Maunakea

Leaving EAO



Left to right: Systems Administrator, Henry Stilmack; Electronics/Electrical Technician, Simeon Johnson; Support Astronomer, Jan Wouterloot Electronic and Instrument Systems Engineer, Tim Chuter; Researcher and EACOA fellow, Tie Liu

New EAO Staff/visiting Researchers



Left to right: Telescope System Specialist, Alexis Acohido; EAO Fellow, Dr. Alex Tetarenko; System Ad-ministrator, Devin-Jacob Estrada; Telescope System Specialist, Miriam Fuchs; Instrumentation Intern, Taishi Nam-mato; Visiting Researcher, Hongjun Ma; Electronics Technician, Jason Fleck



Left to right: New faces at EAO in Hilo:Skye and Summer Matulonis; Luke Ezekiel Mairs Emma Li

JCMT staff at this meeting



Mark Rawlings Telescope Scheduler





Sarah Graves Scientific Programmer

Alex Tetarenko EAO Fellow

