Abstract: <span>The EHT Wiki is the primary vehicle for communication with the project. The site contains pages on science investigations, algorithmic development, new hardware, and staging information for observations and data processing. This talk will introduce the Wiki and walk through its various sections to show how it is used to help organize the EHT.</span>
EventHorizonTelescope

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The EHT 2014 meeting will be held at Perimeter Institute in Waterloo, ON, Canada during the week of 10-14 November 2014.

Quick links:
- Active science
- EHT data
- Data reduction tools
- Media and presentations
- Observing (2013, 2015 Planning)
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Event Horizon Telescope Home

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Welcome to the Event Horizon Telescope

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Go to "http://eht-wiki.haystack.mit.edu/Event_Horizon_Telescope_Home/Active_Science"
Active Science

Known ongoing scientific projects with primary contacts:

- **1mm VLBI imaging of BLLAC after a major Outburst** (Thomas Krichbaum +...)
- **3C 279 structure variability, possibly include other wavelength data** (Rusen Lu +)
- **Astrometry of Flares Near Sgr A* with Polarimetric VLBI** (Michael Johnson)
- **Brightness temperature and spectral properties of the jet launching regions** (Thomas Krichbaum+...)
- **Global observations of BL Lac and other quasar sources** (Bonn +...)
- **Image reconstruction with the sparse modeling** (Marek Honma, Kazunori Akiyama)
- **M87 connections with 2012 TeV enhancement** (Kazunori Akiyama, Rusen Lu)
- **M87 Visibility Modeling** (Avery Broderick)
- **Multi-year M87 sizes** (Rusen Lu)
- **NRAO 530 structure after the GeV flare in November 2010, possibly include MWL data** (Kazunori Akiyama, Rusen Lu+)
- **Ordered Magnetic Fields Near Sgr A** (Michael Johnson)
- **Polarimetry** (Michael Johnson, Vincent Fish)
- **Sgr A* closure phases** (Vincent Fish, Avery Broderick)

Tags: (Edit tags)
No tags
Astrometry of Flares Near Sgr A* with Polarimetric VLBI

We have developed a technique that uses fractional polarization measurements to perform relative astrometry of compact flaring structures near Sgr A* referencing them to the quiescent emission centroid. A paper outlining these ideas has been submitted to ApJ.

Continued work on this project falls into several categories:

1. Application to 2013 EHT data
2. Extended theoretical studies to probe the spacetime near Sgr A* or more complex dynamical configurations.

Please contact Michael Johnson (mjohnson@cfa.harvard.edu) if you are interested in joining these efforts.

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No tags
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Tags: (Edit tags)
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Files (1)

Polarimetric Astrometry.pdf

Images 0

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Comments (0)
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perpendicular to the long baselines between Hawaii and the US mainland.

2. Circular Gaussian fits to the visibility amplitudes on VLBI baselines agree with values obtained by Doelemman et al. 2012. We find no evidence of significant changes in ISCO-scale structure between 2009 and 2012 observations.

Data Memo

1. The first memo (October 10th, 2013; data memo v1.pdf)
2. The supplementary memo on amplitude calibrations (July 7th, 2014; memo M87 ampcal.pdf)

Science Cases

1. Physical structure of 1.3 mm emission: are newly detected closure phases consistent with models of Broderick & Loeb 2009, Dexter et al. (2012), Avery's force-free jet model, a jet model developed in ASIAA and other models? More generally, what can we state on physical structure of our data?

2. Time variation in the ISCO-scale structure: Are our results consistent with results of Dexter et al. (2012) predicting the disc variability drive turbulence on year time-scales? No changes in current VLBI data might be explained by the lack of uv-coverages or baseline length to detect variations in ISCO-scale structure. This data also could be used for the science case proposed by Keiichi Asada.

3. Relation with very weak TeV enhancement around 2012 observations: 2012 observations were carried out in the middle of very weak TeV reported in Beilicke & VERITAS Collaboration (2012). We could discuss mechanism of elevation in underlying TeV flux using our 2012 data with 2009 EHT data (there was no VHE flare around 2009 observations) and other low frequency data Hada et al. (2014).

Interpretation and draft for publications

Kazunori Akiyama, Ru-sen Lu, and Vincent Fish et al. are now preparing the paper draft mainly discussing issues on science cases 1 & 3. We note that interpretations described in the following drafts are not yet the final version (springboard for discussion), and can be flexibly changed depending on discussions with you. We are very welcome if you can join in scientific discussions on following drafts.

1. The first version (Updated on August 27, 2014; manuscript v1.7.pdf)

References for 2012 TeV enhancements
Contact Person: Kazunori Akiyama (kazunori.akiyama@nao.ac.jp), Ru-sen Lu (rslu@haystack.mit.edu) and Vincent Fish (vfish@haystack.mit.edu)

Introduction:

EHT observations in March 2012 was eventually hold in just middle of the weak and long TeV enhancement detected with VERITAS.

Here is the summary of 2012 data;

1. we have acquired 1.3 mm VLBI interferometric phase information on M87 through measurement of closure phase on the triangle of long baselines measured closure phases are consistent with 0 degree, suggesting that the compact structure on scales of a few Schwarzschild radii is symmetric a perpendicular to the long baselines between Hawaii and the US mainland.
2. Circular Gaussian fits to the visibility amplitudes on VLBI baselines agree with values obtained by Doeelman et al. 2012. We find no evidence of significant changes in ISCO-scale structure between 2009 and 2012 observations.

Data Memo

1. The first memo (October 10th, 2013; data_memo_v1.pdf)
2. The supplementary memo on amplitude calibrations (July 7th, 2014; memo_M87_ampcal.pdf)

Science Cases

1. Physical structure of 1.3 mm emission: are newly detected closure phases consistent with models of Broderick & Loeb (2009), Broderick & Loeb (2009), Dexter et al. (2012), Avery's force-free jet model, a jet model developed in ASIAP and other models? What can we learn from our data?
2. Time variation in the ISCO-scale structure: Are our results consistent with results of Dexter et al. (2012) for turbulence on year time-scales? No changes in current VLBI data might be explained by the current ISCO-scale structure. This data also could be used for the science case proposed by Keilichi Aoki.
3. Relation with very weak TeV enhancement around 2012 observations: 2012 observations reported in Beilicke & VERITUS Collaboration (2012). We could discuss mechanism of elevated 2009 EHT data (there was no VHE flare around 2009 observations) and other low frequency...
Data

Data files are linked below. These data are not yet public and not yet finalized. Please contact Vincent Fish (vfish@haystack.mit.edu) if you intend to use these files or if you have any questions about the data.

Interpretation

The memo Probably Not a Jet: Toy Model of Closure Phases from a Sgr A* Double Source (http://eht-wiki.haystack.mit.edu/@ap...phase-test.pdf) makes it clear that our observed closure phases are not very consistent with a model of the millimeter emission coming from a jet viewed perpendicular to the line of sight.

The memo First Analysis of Closure Phase Data Set in the Context of RIAFs describes the first attempts to simultaneously model the closure phase and visibility magnitude data sets in terms of the RIAF models described in Broderick, Fish, Doeleman, and Loeb (2011). A broad consistency is found between two data sets within the RIAF model family for the majority of closure phase data epochs, producing substantially improved parameter estimates. How striking exception is day 94 of 2011, corresponding to the only day with a net negative closure phase, which yields significantly different parameter estimates suggesting the presence of short-timescale structural variability. Simple attempts to model the structural variations are also presented, finding that both jet and jet variability are easily capable of reproducing the low closure phases observed on that day.

Opportunities for collaboration

Items of high priority for this working group include

- Interpreting the main result of a nonzero closure phase. This will likely include parameter estimates around Sgr A*. Can we strengthen the case for dynamical connections between the Galactic Center source and the Sgr A* jet?
- Determining characteristics of Sgr A* variability. There are enough data points to make a statement, but it is not yet clear to what extent we can separate the effects of (slow) interday variability from the closure phase due to changing projected baseline orientations. Some statistical work may be useful in the context of various models (e.g., GRMHD simulations of aligned and tilted accretion disks).
- Determining whether there are any other interesting conclusions that can be drawn from the data.
- Deciding on the optimal statistical treatment of these data along with a pared-down, clearer model for the RIAF.
Matrix of Observed Sources

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Green = observed  Red = no useful VLBI data
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### Files (10)

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LMT Receiver Group

This is for the LMT Receiver Group

Only the LMT Receiver Group had read/write access to this page and its subpages.

Please let me know if you have any problems,

Jason

Tags: (Edit tags)
No tags

Files (7)

10-mRxControl208RevC.pdf
CARMA SIS CAN module wiring diagram
hardware

Orthomode transducer (OMT) separates X, Y linear polarizations to outputs #1 and #2

Horn couples signals from telescope (210-270 GHz, all polarizations) into waveguide

(1-9 GHz) IF amp #1

SIS mixer #1

IF #1 to lab

SIS mixer #2

Waveguide polarizer converts RCP, LCP to X, Y

(1-9 GHz) IF amp #2

IF #2 to lab

1 inch
Calendar & Meetings

And meeting minutes and upcoming schedule

Events from one or more calendars could not be shown here because you do not have the permission to view them.
Teleconferences

This page has no content. Enrich EventHorizonTelescope by contributing.

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Files (0)

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Kazunori Akiyama, Ru-sen Lu, and Vincent Fish et al. are now preparing the paper draft mainly discussing issues on science cases 1 & 3. We note that interpretations described in the following drafts are not yet the final version (springboard for discussion), and can be flexibly changed depending on discussions with you. We are very welcome if you can join in scientific discussions on following drafts.

1. The first version (Updated on August 27, 2014; manuscript.v1.7.pdf)

References for 2012 TeV enhancements

1. VERITAS paper reporting the detection of this enhancement: Bellicke & VERITUS Collaboration 2012, AIPC, 1505, 586

Tags: (Edit tags)
No tags

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