

Activity Report of Commission J September 19, 2020 to July 30, 2021

August 6, 2021

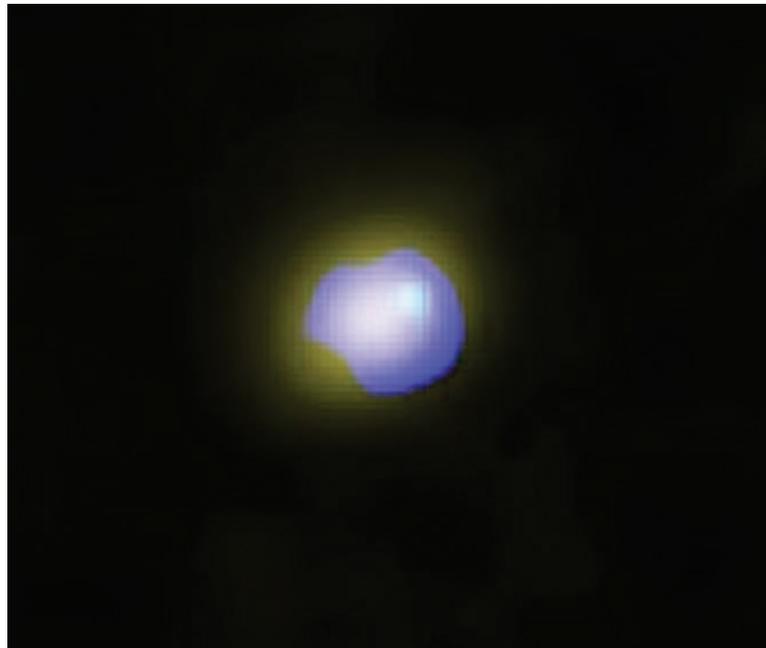
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ALMA project

- ALMA press release (June 11, 2021)

ALMA Discovers Earliest Gigantic Black Hole Storm

Researchers using the Atacama Large Millimeter/submillimeter Array (ALMA) discovered a titanic galactic wind driven by a supermassive black hole 13.1 billion years ago. This is the earliest-yet-observed example of such a wind to date and is a telltale sign that huge black holes have a profound effect on the growth of galaxies from the very early history of the Universe.



ALMA image of the distant galaxy J1243+0100 hosting a supermassive black hole in its center. The distribution of the quiet gas in the galaxy is shown in yellow and the distribution of high-speed galactic wind is shown in blue. The wind is located in the center of the galaxy, which indicates the wind is driven by the supermassive black hole.

Credit: ALMA (ESO/NAOJ/NRAO), Izumi et al.

Activities of meetings

- **VLBI Consortium Symposium 2019: VLBI Crosses National Borders**

Date: Nov. 16th-17th, 2020 : Online meeting

The content of discussions by the VLBI Future Planning Working Group, which was established in response to last year's discussions, and future visions from various perspectives were discussed intensively to explore and share the future of VLBI throughout the community.

- **Japan Radio Astronomy Forum Symposium 2020: Radio astronomy that opens up with extreme performance**

Date: Dec. 21st-22nd, 2020 : Online meeting

Japan Radio Astronomy Forum is an organization that represents the radio astronomy community in Japan. As part of its activities, a symposium is held every year for the purpose of sharing the science and observation technology of radio astronomy and discussing future plans. At the symposiums of the last two years, we have held multifaceted discussions over two days, focusing on technological development that will support future radio astronomy and future science in collaboration with other wavelengths and fields. Based on these achievements, this meeting focused on various "extreme performances" regardless of projects and existing telescopes, to explore science that can only be done by radio astronomy and new methods to realize it in the entire community.

- **FY2020 ALMA/45m/ASTE Users Meeting**

Date: Jan. 5th-7th, 2021 : Online meeting

- **Submm single dish JCMT with maximum aperture in the Northern Hemisphere & very fulfilling focal plane devices - Let's use JCMT!**

Date: Jan. 5th-7th, 2021 : Online meeting

In conjunction with the ALMA / 45m / ASTE User's Meeting (January 5-7, 2021 morning), this meeting was held with the purpose of promotion of research using JCMT.

- **ngVLA Science WG Day3**

Date: Jan. 15th, 2021 : Online meeting

The National Astronomical Observatory of Japan ngVLA Study Group has formed a Science Working Group (SWG) with the community to embody participation in the ngVLA project. In December, debriefing sessions for galactic objects (Day 1) and extragalactic objects (Day 2) were held, respectively. In response to this, the entire joint meeting was held as Day 3.

- **SKA-Japan Webinar series "Construction finally started! SKA and 10 sciences"**

Date: Jan. 27th, Feb. 5th, 12th, 19th, Mar. 2nd, 2021 : Online meeting

The next-generation centimeter-wave telescope SKA (Square Kilometer Array) will be under construction in 2021 after a long preparation period. Taking this opportunity, SKA-Japan has decided to plan a total of five webinar series in order to convey the appeal of the SKA project and its science to the astronomy community. In this series, 10 typical scientific topics that are being considered in Japan and abroad and the technologies that accompany them were explained.

- **Research of star formation using ALMA high frequency band**

Date: Mar. 2nd, 2021 : Online meeting

This meeting was held to take a bird's-eye view of the research related to star formation / interstellar phenomena in the ALMA high-frequency band (Band 8/9/10) currently being conducted in Japan, and to discuss future observation strategies in related communities.

- **13th East Asian VLBI Workshop 2021**

Date: Mar. 2nd-5th, 2021 : Online meeting

In this workshop, the fresh scientific results obtained with VLBI were presented. The latest update on developments for radio astronomy in South-East Asia and in the world to establish so-called a "Global VLBI Network" were also discussed.

- **The 21st mm/submm receiver Workshop**

Date: Mar. 8th – 9th, 2021 : Online meeting

This workshop was held to create cutting-edge technologies, innovative applications, and expansion of basic technologies related to ultra-high-sensitivity receivers for millimeter, submillimeter, and terahertz waves. The purposes of this workshop were to provide a place for people to gather and discuss the latest information freely and openly, and to further improve Japan's international competitiveness and driving force, improve development efficiency, and to expand/inherit the base of basic technological capabilities.

- **Unsolved problems of astronomy challenged with innovation of (sub)millimeter-wave single dish telescopes**

Date: Mar. 29th-31st, 2021 : Online meeting

This meeting was held to discuss prospects of new science to accelerate the realization of large submillimeter-wave single dish telescope.

- **Science lecture commemorating retirement of Prof. Tetsuo Hasegawa**

Date: Apr. 2nd, 2021 : Online meeting

- **East Asia SKA workshop 2021**

Date: May 26th -28th, 2021 : Online meeting

This workshop was held to advance our SKA-related activity in East Asia. In oral sessions, invited speakers introduced the SKA project and SKA precursor/pathfinder activities. Scientific review talks and many contributed talks covering diverse topics were also presented. Poster presentations and breakout discussion to encourage conversations to kick off practical collaborations in future were also organized.

- **Japan SKA Consortium Science Strategy Workshop 2021**

Date: Jul. 12th-14th, 2021

Location: National Astronomical Observatory of Japan and Zoom

Square Kilometre Array (SKA) is next generation radio interferometer which has been constructing in Australia and South Africa by international collaboration. The construction of SKA Phase 1 started this year and scientific operation will start in the late 2020s. This workshop was held to share the policy of access to scientific outputs by SKA and discuss the priority of science goals.

- **ngVLA-J Development Days 2021**

Date: Jul. 15th, 16th, 2021 : Online meeting

NAOJ established the NAOJ ngVLA Study Group in FY2019 to consider and plan with NRAO a possible contribution from Japan to the development, construction and operations of ngVLA. In these initial 2 years, the Study Group has progressed in the discussion with NRAO and other prospective international partners and started some initial development studies based on the know-how acquired by ATC and the ALMA Project during the construction and operations of ALMA. This meeting was held to share the technical concept of ngVLA with the Japanese Community and report on the progress and technical achievements in these 2 years. The workshop covered topics related to frontend, cryogenics, time/freq distribution, fabrication and mechanical design, and computing.