

Activity Report of Commission J
July 31, 2021 to April 30, 2022

May 17, 2022

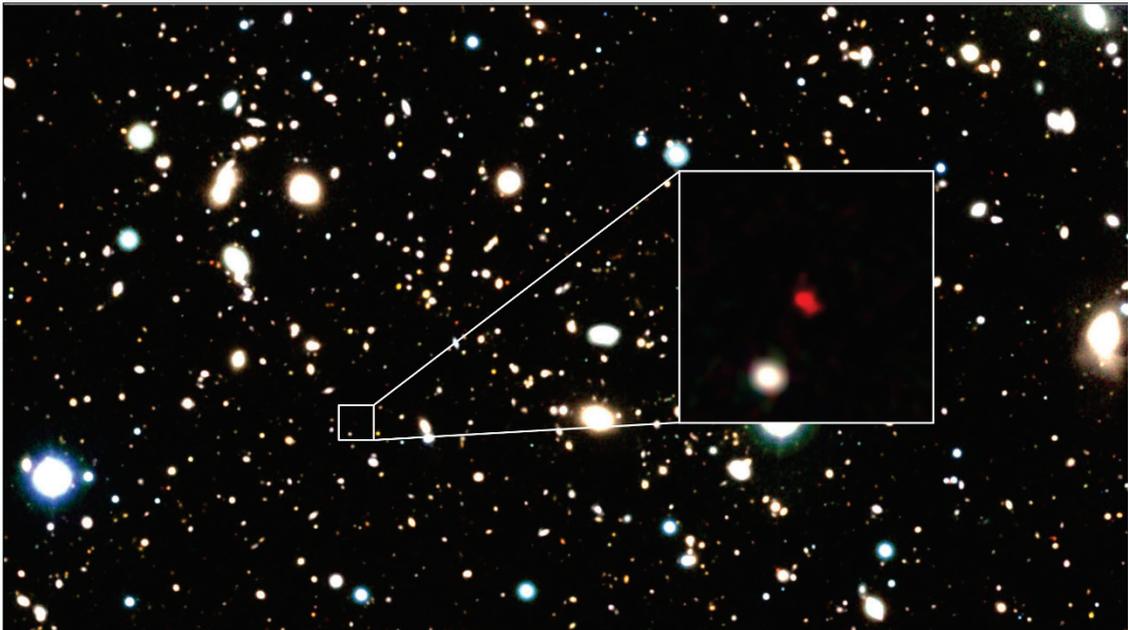
Nario Kuno (University of Tsukuba)

ALMA project

- ALMA press release (April 7, 2022)
(from NAOJ webpage <https://alma-telescope.jp/en/news/most-distant-galaxy-202204>)

Most Distant Galaxy Candidate Yet

An international astronomer team has discovered the most distant galaxy candidate to date, named HD1, which is about 13.5 billion light-years away. This discovery implies that bright systems like HD1 existed as early as 300 million years after the Big Bang. This galaxy candidate is one of the targets of the James Webb Space Telescope launched late last year. If observations with the James Webb Space Telescope confirm its exact distance, HD1 will be the most distant galaxy ever recorded.



Three-color image of HD1, the most distant galaxy candidate to date, created using data from the VISTA telescope. The red object in the center of the zoom-in image is HD1.

Credit: Harikane et al.

Activities of meetings

- **Radio Astronomy Future Plan Review Symposium 2021**

Date: Jul. 31st, 2021 : Online meeting

At this symposium, representatives of the future plans for the field of radio astronomy, who submitted the LoI (Letter of Intent) to Master Plan 2023, gave lectures on their future plans. The purpose of this symposium was to deepen the community's understanding of the proposed

plan and to solicit opinions from the community.

- **Radio/Interferometer summer school**

Date: Sep. 16th, 17th, 21st, 22nd, 24th, 2021 : Online meeting

- **ALMA workshop: Cold outflows near and far: crossroads of our current understandings**

Date: Nov. 1st - 2nd, 2021 : Online meeting

This workshop was held to review recent findings on outflows (observed by ALMA) found on various astronomical scales from protostars to distant galaxies and to deepen their understanding of their properties.

- **Linking the science of large interferometers in the 2030s**

Date: Nov. 30th - Dec. 1st, 2021 : Online meeting

The goals of this workshop are to (1) identify scientific synergies between future large interferometers, SKA and ngVLA, and their synergies with current facilities such as ALMA and VLBI collaborations, (2) discuss the future science landscape with large interferometers (ALMA, VLBI, SKA, ngVLA) for the Japanese community in the 2030s and beyond.

- **VLBI Consortium Symposium 2021: Know the current location of domestic VLBI**

Date: Dec. 2nd – 4th, 2021

Venue: National Astronomical Observatory of Japan (Mitaka) and online

At the symposium, the specific activities that are currently underway were reported, and shared and discussed the status of activities within the community. In addition, while deepening these discussions, the research plans of the VLBI community in Japan in collaboration with astronomical research, geodesy research, and technological development research were discussed.

- **FY2021 ALMA/45m/ASTE Users Meeting**

Date: Dec. 14th, 16th, 21st, 2021 : Online meeting

- **ALMA workshop: Science of mm/submm VLBI with ALMA**

Date: Dec. 20th, 22nd, 2021 : Online meeting

The ALMA workshop was held to discuss science by millimeter/submillimeter wave VLBI. At the workshop, science that cannot be achieved by the current VLBI in the cm/mm band, but is made possible only by millimeter/submillimeter VLBI observations with ALMA was discussed.

- **Black Hole Astrophysics with VLBI 2022**

Date: Feb. 7th – 9th, 2022 : Online meeting

The accretion flow, jet wind, and black hole, were discussed focusing on VLBI high-resolution observations and theories, including the Event Horizon Telescope and the East Asian VLBI network.

- **The 22nd mm/submm receiver Workshop**

Date: Feb. 21st - 22nd, 2022 : 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.

- **Radio Astronomy Consortium Symposium 2021**

Date: Mar. 7th-8th, 2022 : Online meeting

The primary purpose of this year's Radio Astronomy Consortium Symposium was to return to its original purpose and share the latest achievements in each of Japan's wide-ranging radio astronomy fields.

- **East Asian ALMA Development Workshop 2022**

Date: Mar. 9th-10th, 2022 : Online meeting

The main topic of this year was future of Science Archive. Improvements to ALMA Science Archive is one of the key development items for the success of ALMA in the era of 2030 as discussed in ALMA Development Road Map.

- **ALMA workshop: Synergies between ALMA and wide-field high-cadence multi-wavelength surveys**

Date: Mar. 28th – 30th, 2022 : Online meeting

This workshop was held to discuss synergies between ALMA and the ongoing and future surveys in the space, time, and energy (i.e., wavelength) domains, such as those with HSC/PFS at opt/NIR wavelength, the CMB surveyors (e.g., LiteBIRD, PolarBear), and those from SKA1/ngVLA.