



FOR IMMEDIATE RELEASE

Radio-astronomers conduct marathon observation with world-sized telescope

DWINGELOO, the Netherlands (12 January 2009) - Radio telescopes around the world will conduct a nearly continuous 33-hour observation of three quasars this week, tracking the extra-galactic objects as they rise and set with the rotation of the Earth. The observation is part of a demonstration at the opening event for the International Year of Astronomy 2009 (IYA 2009) in Paris 15-16 January.



Telescopes and networks used for e-VLBI observation to be demonstrated 15-16 January at the International Year of Astronomy (IYA 2009) Opening Ceremony. Image credit: Joint Institute for VLBI in Europe.

17 telescopes in Asia, Australia, Europe, North America and South America will track the quasars J0204+1514, 0234+285 and 3C395, switching between the three to accommodate different frequency observing capabilities of the participating telescopes.

Arpad Szomoru, Head of Technical Operations and R&D at the Joint Institute for VLBI in Europe (JIVE) notes, "24-hour VLBI observations of a single source have been done in the past, but the unique aspect of these observations is that telescopes located all around the globe, with widely different data acquisition systems, producing different data formats, are combined to act as a single, real-time instrument."

Using an astronomical technique called real-time, electronic Very Long Baseline Interferometry or e-VLBI, participating telescopes observe the same region of sky simultaneously, and data from each telescope is sampled and streamed through high-speed networks to a central processor at JIVE in the Netherlands. Operating in real-time, this central data processor, a purpose-built supercomputer, decodes, aligns and correlates the data for every possible pair of telescopes.

Through e-VLBI, astronomers can generate images of cosmic radio sources with up to one hundred times better resolution than images from the best optical telescopes. The ability to send data electronically and correlate it in real-time has the additional advantage of providing data to astronomers within hours of conducting an observation, rather than weeks later via the traditional VLBI method of recording data onto disks and shipping it to the correlator.

JIVE Director Huib Jan van Langevelde explains, "With VLBI we can zoom in on the most energetic events in the universe, and the new e-VLBI technique allows us to do this fast enough to catch such events on the time-scale that they occur and respond quickly."

Representatives from participating institutes will attend the IYA 2009 Opening Ceremony in

Paris to demonstrate the observation to over 800 attendees, including Nobel Prize winners and aspiring young scientists from over 100 countries. Organizers of the observation have also launched an educational Web site about e-VLBI, available to attendees of the Paris event.

This e-VLBI observation is made possible by the Express Production Real-time e-VLBI Service (EXPreS) and the cooperation of radio observatories and National Research and Education Networks. Funded by the European Commission, EXPreS has been working since 2006 to connect radio telescopes around the world with the correlator at JIVE using high-speed optical networks.

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About EXPreS

Express Production Real-time e-VLBI Service (EXPreS, www.expres-eu.org) is a three-year project funded by the European Commission with the objective of creating a real-time distributed astronomical instrument of intercontinental dimensions. This electronic Very Long Baseline Interferometer (e-VLBI) is achieved using high-speed communication networks and connecting together some of the largest and most sensitive radio telescopes on the planet. EXPreS is a collaboration of 19 radio astronomy institutes and national research networks in 14 countries and is coordinated by the Joint Institute for VLBI in Europe (JIVE). EXPreS is an Integrated Infrastructure Initiative (I3), funded under the European Commission's Sixth Framework Programme (FP6), contract number 026642.

About JIVE

The Joint Institute for VLBI in Europe (JIVE, www.jive.nl) is a scientific foundation with a mandate to support the operations of the European VLBI Network (EVN). For this purpose it maintains, operates and develops the MKIV EVN Data Processor, a powerful supercomputer that combines the signals from radio telescopes located across the planet. Through this technique, called Very Long Baseline Interferometry (VLBI), astronomers can make detailed images of cosmic radio sources, providing astronomers with the clearest, highest resolution view of some of the most distant and energetic objects in the Universe.

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Participating telescopes:

- Arecibo (PR/USA)
- ATCA (Australia)
- Cambridge (UK)
- Effelsberg (Germany)
- Hobart (Australia)
- Jodrell Bank (UK)
- Kashima (Japan)
- Medicina (Italy)
- Metsähovi (Finland)
- Mopra (Australia)
- Onsala (Sweden)
- Sheshan (China)
- TIGO (Chile)
- Torun (Poland)
- Urumqi (China)
- Westerbork (Netherlands)
- Westford (USA)

Data networks used:

- AARNet (Australia)
- AMPATH (USA)
- APAN (Asia-Pacific)
- AtlanticWave (USA, Canada, Brazil)
- CANARIE (Canada)
- CENIC (USA)
- Centennial (Puerto Rico)
- CSTNET (China)
- DFN (Germany)
- FUNET (Finland)
- GARR (Italy)
- GÉANT2 (Europe)
- Internet2 (USA)
- JANET (UK)
- JGN2plus (Japan)
- Jülich Supercomputing Centre (Germany)
- MIT Lincoln Laboratory (USA)
- Netherlight (Netherlands)
- NGIX (USA)
- NORDUnet (Denmark, Finland, Iceland, Norway, Sweden)
- PIONIER (Poland)
- RedCLARA (Latin America)
- REUNA (Chile)
- Southern Cross Cables Network (Australia, New Zealand, USA)
- StarLight (USA)
- SUNET (Sweden)
- SURFnet (Netherlands)
- TransPAC2 (Asia-Pacific, USA)