

Arecibo joins global network to create 6,000-mile telescope

10 June 2008

On May 22, Arecibo Observatory in Puerto Rico joined other telescopes in North America, South America, Europe and Africa in simultaneously observing the same targets, simulating a telescope more than 6,800 miles (almost 11,000 kilometers) in diameter.

The telescopes are all members of the Express Production Real-time e-VLBI Service (EXPReS) project, and May 22 marked a live demonstration of their first four-continent, real-time, electronic Very Long Baseline Interferometry (e-VLBI) observations.

VLBI uses multiple radio telescopes to simultaneously observe the same region of sky -- essentially creating a giant instrument as big as the separation of the dishes. VLBI can generate images of cosmic radio sources with up to 100 times better resolution than images from the best optical telescopes.

The results were immediately transmitted to Belgium, where they were shown as part of the 2008 Trans-European Research and Education Networking Association Conference.

The Arecibo team called the demonstration a major milestone in the telescope's e-VLBI participation, with a data-streaming rate to the central signal processor at the Joint Institute for VLBI in Europe (JIVE) in the Netherlands four times higher than Arecibo had previously achieved.

"These results are very significant for the advance of radio astronomy," said JIVE director Huib Jan van Langevelde. "It shows not only that telescopes of the future can be developed in worldwide collaboration, but that they can also be operated as truly global instruments."

EXPReS, funded by the European Commission, aims to connect up to 16 of the world's most sensitive radio telescopes to the JIVE processor to

correlate VLBI data in real time. This replaces the traditional VLBI method of shipping data on disk and provides astronomers with observational data in a matter of hours rather than weeks, allowing them to respond rapidly to transient events with follow-up observations.

Source: Cornell University

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