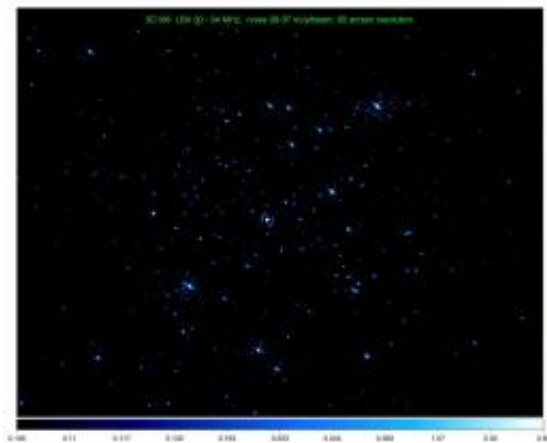


LOFAR: Giant radio telescope goes multi-national

February 3 2011



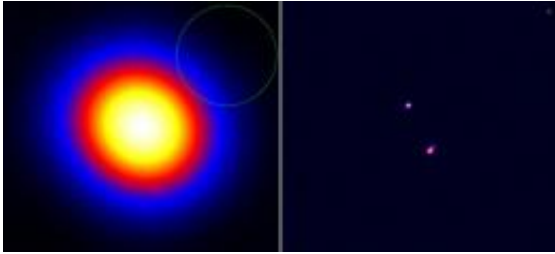
The image taken in a single shot by LOFAR reveals the stunning variety of objects which surround the quasar 3C196. Credit: ASTRON and LOFAR

In the quest to discover more about our Universe and the birth of stars and galaxies, a new UK telescope connected for the first time to others across Europe has delivered its first 'radio pictures'. The images of the 3C196 quasar (a black hole in a distant galaxy) were taken in January 2011 by the International LOFAR Telescope (ILT). LOFAR (Low Frequency Array), which is co-ordinated by ASTRON in the Netherlands, is a network of radio telescopes designed to study the sky at the lowest radio frequencies accessible from the surface of the Earth with unprecedented resolution.

The UK based [telescope](#) at STFC's Chilbolton Observatory in Hampshire, is the western most 'telescope station' in LOFAR. The addition of Chilbolton to other stations in Europe makes the LOFAR array almost 1000 km wide - ten times as large as the original array in the Netherlands - and creates the largest telescope in the world.

"This is a very significant event for the LOFAR project and a great demonstration of what the UK is contributing", said Derek McKay-Bukowski, STFC/SEPnet Project Manager at LOFAR Chilbolton. "The new images are three times sharper than has been previously possible with LOFAR. LOFAR works like a giant zoom lens - the more radio telescopes we add, and the further apart they are, the better the resolution and sensitivity. This means we can see smaller and fainter objects in the sky which will help us to answer exciting questions about cosmology and [astrophysics](#)."

"This is fantastic", said Professor Rob Fender, LOFAR-UK Leader from the University of Southampton. "Combining the LOFAR signals together is a very important milestone for this truly international facility. For the first time, the signals from LOFAR [radio telescopes](#) in the Netherlands, France, Germany and the United Kingdom have been successfully combined in the LOFAR BlueGene/P supercomputer in the Netherlands. The connection between the Chilbolton telescope and the supercomputer requires an internet speed of 10 gigabits per second - over 1000 times faster than the typical home broadband speeds," said Professor Fender. "Getting that connection working without a hitch was a great feat requiring close collaboration between STFC, industry, universities around the country, and our international partners."



A close up of the quasar 3C196. Credit: ASTRON and LOFAR

"The images show a patch of the sky 15 degrees wide (as large as a thousand full moons) centred on the quasar 3C196", said Dr Philip Best, Deputy LOFAR-UK leader from the University of Edinburgh. "In visible light, quasar 3C196 (even through the Hubble Space Telescope) is a single point. By adding the international stations like the one at Chilbolton we reveal two main bright spots. This shows how the International LOFAR Telescope will help us learn about distant objects in much more detail."

LOFAR was designed and built by ASTRON in the Netherlands and is currently being extended across Europe. As well as deep cosmology, LOFAR will be used to monitor the Sun's activity, study planets, and understand more about lightning and geomagnetic storms. LOFAR will also contribute to UK and European preparations for the planned global next generation radio telescope, the Square Kilometre Array (SKA).

Provided by Science and Technology Facilities Council

Citation: LOFAR: Giant radio telescope goes multi-national (2011, February 3) retrieved 20 March 2024 from <https://phys.org/news/2011-02-giant-radio-telescope-multi-national.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private

study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.