

## ☰ Topic Page: [radio telescope](#)

Definition: **radio telescope** from *The Penguin Dictionary of Science*

An instrument designed to detect and observe radio sources. Since radio frequencies correspond to large wavelengths, large reflectors in the form of ►paraboloids are used as aerials to achieve good ►resolution. Alternatively, an array of aerials can be used (a **radio interferometer**), joined to the same receiver in such a way that the phase of the signal is preserved, and the image can then be reconstructed.



Image from: [radio telescope Just like an optical reflector, a... in Astronomy Encyclopedia](#)

Summary Article: **radio telescope**

From *The Hutchinson Unabridged Encyclopedia with Atlas and Weather Guide*

Instrument for detecting radio waves from the universe in radio astronomy. Radio telescopes usually consist of a metal bowl that collects and focuses radio waves the way a concave mirror collects and focuses light waves. Radio telescopes are much larger than optical telescopes, because the wavelengths they are detecting are much longer than the wavelength of light. The largest single dish is at Arecibo Observatory, Puerto Rico.

A large dish such as that at Jodrell Bank, Cheshire, England, can see the radio sky less clearly than a small optical telescope sees the visible sky. **Interferometry** is a technique in which the output from two dishes is combined to give better resolution of detail than with a single dish. **Very long baseline interferometry** (VBLI) uses radio telescopes spread across the world to resolve minute details of radio sources. The deep-space network (DSN) works in this way to track artificial satellites.

In **aperture synthesis**, several dishes are linked together to simulate the performance of a very large single dish. This technique was pioneered by English radio astronomer Martin Ryle at the Mullard Radio Astronomy Observatory, Cambridge, England, site of a radio telescope consisting of eight dishes in a 5-km/3-mi line. The Very Large Array in New Mexico consists of 27 dishes arranged in a Y-shape, which simulates the performance of a single dish 27 km/17 mi in diameter. Other radio telescopes are shaped like long troughs, and some consist of simple rod-shaped aerials.

The building of two new large-array telescopes was approved by different international teams in August 2000. The Atacama Large Millimetre Array (ALMA), situated in the Atacama Desert, Chile, consists of 64 dish antennae, some 12 m/39 ft wide and some 7 m/23 ft wide. It began observations in 2011. The Square Kilometre Array (SKA) is scheduled to begin construction in 2016. It will be a centimetre-wave radio array with a total collecting area, scattered over many instruments, of one square kilometre (a million square metres).

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## APA

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## Chicago

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## MLA

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