



New Radio Telescope Array to Be Built in Nevada Desert

Description

A remote area in Nevada's Great Basin is set to host the world's most sensitive radio telescope array. The California Institute of Technology, which is leading the project, announced last week that it has secured enough funding to start construction.

Known as the Deep Synoptic Array (DSA), the project will feature 1,650 individual radio dishes. These will study phenomena such as supermassive black holes, pulsars (spinning dead stars), and fast radio bursts, which are brief, intense explosions of radio waves from space. Gregg Hallinan, a professor of astronomy at Caltech, highlighted the project's uniqueness due to the sheer number of antennas involved.

Radio telescopes collect naturally occurring radio waves emitted by celestial objects like stars and galaxies. Unlike optical telescopes, which capture images directly, radio telescopes convert the signals they receive into data or images. Hallinan believes the DSA will be able to survey the sky 100 times faster than existing telescopes.

Each dish will be about 20 feet wide, creating one of the largest radio telescope arrays ever built, covering more than 123 square miles in White Pine County, managed by the Bureau of Land Management. The project is currently going through the permitting process, and construction could begin next year, with completion expected by 2029.

Funding for the DSA comes from Schmidt Sciences, founded by former Google CEO Eric Schmidt. As an initial test, two prototype dishes were recently built in California. The selected location in the Great Basin is ideal due to its low population and minimal radio interference.

Vocabulary List:

1. **array** //ə'reɪ// (noun): group of similar things arranged together
2. **phenomena** //fə'nɒmənə// (noun): things or events that happen and are studied
3. **sensitive** //sensətɪv// (adjective): easily affected or changed by small things
4. **pulsars** //ˈpʌlsəz// (noun): very dense stars that spin and send radio waves
5. **interference** //,ɪntər'fɪərəns// (noun): unwanted signals or noises that make problems
6. **prototype** //ˈprɒtə,taɪp// (adjective): used as an early model for testing

Comprehension Questions



Multiple Choice

1. What is the name of the radio telescope array being constructed in Nevada's Great Basin?

- Option: Great Synoptic Array
- Option: Deep Synoptic Array
- Option: Ultra Synoptic Array
- Option: Mega Synoptic Array

2. How many individual radio dishes will the Deep Synoptic Array feature?

- Option: 500
- Option: 1,000
- Option: 1,650
- Option: 2,500

3. Which institution is leading the Deep Synoptic Array project?

- Option: Harvard University
- Option: California Institute of Technology
- Option: Stanford University
- Option: Massachusetts Institute of Technology

4. What is one of the phenomena the Deep Synoptic Array will study?

- Option: Comets
- Option: Supermassive black holes
- Option: Weather patterns
- Option: Ocean currents

5. What is the expected completion year for the Deep Synoptic Array?

- Option: 2025
- Option: 2027
- Option: 2029
- Option: 2030

6. Who founded Schmidt Sciences, which is funding the DSA?

- Option: Larry Page
- Option: Eric Schmidt
- Option: Sundar Pichai
- Option: Bill Gates



True-False

7. The construction of the Deep Synoptic Array has already started.
8. The DSA aims to study pulsars, which are spinning dead stars.
9. The antenna dishes of the DSA will be approximately 30 feet wide.
10. The DSA project is managed by the Bureau of National Resources.
11. The selected location for the DSA has high population density and significant radio interference.
12. Construction of the DSA could begin next year.

Gap-Fill

13. The Deep Synoptic Array will cover more than _____ square miles in White Pine County.
14. Each dish of the Deep Synoptic Array will have a width of about _____ feet.
15. The project is currently going through the _____ process.
16. Two prototype dishes were recently built in _____ as an initial test.
17. The DSA is expected to survey the sky _____ times faster than existing telescopes.
18. Funding for the DSA comes from Schmidt _____, founded by former Google CEO Eric Schmidt.

Answer

Multiple Choice: 1. Deep Synoptic Array 2. 1,650 3. California Institute of Technology 4. Supermassive black holes 5. 2029 6. Eric Schmidt

True-False: 7. False 8. True 9. False 10. False 11. False 12. True

Gap-Fill: 13. 123 14. 20 15. permitting 16. California 17. 100 18. Sciences



Vocabulary quizzes

Multiple Choice (Select the Correct answer for each question.)

1. Which group of species is categorized as hominins?
Option: Chimpanzees
Option: Neanderthals
Option: Gorillas
Option: Orangutans
2. What is the primary purpose of archaeological excavations?
Option: To build structures
Option: To discover historical artifacts
Option: To survey land
Option: To plant trees
3. Cognitive development is most closely associated with which area?
Option: Physical growth
Option: Emotional stability
Option: Mental processes
Option: Social interactions
4. Ethical considerations are crucial in which field?
Option: Construction
Option: Business
Option: Research
Option: All of the above
5. What does it mean to be persistent?
Option: To give up quickly
Option: To continue firmly despite opposition
Option: To act impulsively
Option: To be indecisive
6. Collaboration is essential in which type of work environment?
Option: Isolated
Option: Competitive
Option: Team-oriented
Option: Independent
7. What does it mean to decommission a vessel?



- Option: To repair it
- Option: To clean it
- Option: To take it out of service
- Option: To paint it

8. Interference can disrupt which of the following?

- Option: Radio signals
- Option: Public speeches
- Option: Sleep patterns
- Option: Healthy eating

9. Genetic factors are important in understanding which aspect of biology?

- Option: Respiration
- Option: Inheritance
- Option: Photosynthesis
- Option: Digestion

10. What is meant by someone's legacy?

- Option: Their past failures
- Option: Their belongings after death
- Option: The lasting impact of their actions
- Option: Their personal secrets

Gap-Fill (Fill in the blanks with the correct word from the vocabulary list.)

- 11. The ancient site contained several intricate _____ on the stone walls.
- 12. The negotiations _____ when both sides refused to compromise.
- 13. The laboratory presented an _____ of experiments related to climate change.
- 14. Exposure to _____ light can cause damage to the skin.
- 15. Some people have _____ skin that reacts poorly to certain products.
- 16. The archaeologists discovered _____ of an ancient civilization.
- 17. His work left a profound _____ in the field of science.
- 18. Chronic _____ can affect one's ability to concentrate.



19. Some species known to have _____ have shown genetic similarities.

20. The _____ of the environment is a pressing global issue.

Matching Sentences (Match each definition to the correct word from the vocabulary list.)

21. Pulsars are highly magnetized rotating neutron stars that emit beams of electromagnetic radiation.
22. Synthetic materials are often used in the production of clothing.
23. Excavations can reveal insights into ancient civilizations and their lifestyles.
24. Cognitive functions are critical for learning and problem-solving.
25. Interference in communications can lead to misunderstandings.
26. Ethical considerations are vital in clinical trials involving human subjects.
27. Engravings found in caves serve as important historical records.
28. Being persistent in your efforts is key to achieving long-term goals.
29. His commitment to education left a lasting legacy in the community.
30. Hominins provide a fascinating glimpse into our evolutionary past.

Answer

Multiple Choice: 1. Neanderthals 2. To discover historical artifacts 3. Mental processes 4. All of the above
5. To continue firmly despite opposition 6. Team-oriented 7. To take it out of service 8. Radio signals
9. Inheritance 10. The lasting impact of their actions

Gap-Fill: 11. engravings 12. escalated 13. array 14. ultraviolet 15. sensitive 16. remnants 17. legacy 18.
fatigue 19. interbred 20. degradation

Matching sentence: 1. pulsars 2. synthetic 3. excavations 4. cognitive 5. interference 6. ethical 7. engravings
8. persistent 9. legacy 10. hominins

CATEGORY

1. Sci/Tech - LEVEL4

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1. B2
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5. Level 4
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