Research on CMB Radiation

Why in news?

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Indian space scientists are conducting experiments on Cosmic Microwave Background (CMB) radiation in Timbaktu village.

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What are CMB radiation?

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- Indian scientists are conducting experiments to confirm occurrence of unusual space signals in the spectrum of Cosmic Microwave Background (CMB) radiation.
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- CMB is an all-pervasive but weak electromagnetic radiation from the early universe when matter was still to be formed.
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- This radiation does not come from any of the objects that are observed in the universe, like stars or galaxies, it comes from things that are not formed yet.
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- CMB is a relic from an early universe when matter and radiation were still in thermodynamic equilibrium.
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- Thus when it is observed it is similar to looking at the period in universe after the big bang and before the present objects were formed.
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What is the significance of this research?

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- Ever since its discovery, CMB has been an invaluable source of information on the early universe.
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- From its properties, scientists have inferred that the early universe was filled

with hot, dense and extremely uniform gas, mostly hydrogen.
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- The first stars were formed when blobs of these gases fused under the influence of gravity emanating visible light commonly referred as cosmic dawn.
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- The present theory of origin of universe has the probability of being proved practically with the findings derived by observing CMB radiation.
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Why the scientists chose Timbaktu for their tests?

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- Timbaktu is a small hamlet in Anantpur district of Andhra Pradesh, It is surrounded by hills with unusual rock formations.
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- Its location has least contact with the outside world and minimal footprints of modern digital technology.
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- Air present in this place is clean and the sky is clear, making it one of the very few places which practically has no noise.
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- Due to these properties, this place is described as Radio Quiet by space scientists hunting for faint electromagnetic signals from the sky.
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Source: The Indian Express

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