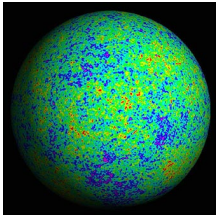


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By: Gabriel Gache, Science News Editor



CMB map  
Cornell University

## **Physicists Claim Evidence of Universe Before Big Bang**

### *Time may have existed previously to this universe*

What was before this universe is currently anybody's guess, but it is highly likely that it was preceded by a similar universe and therefore time existed before the Big Bang. The evidence to back this theory is said to be found in the Cosmic Microwave Background radiation left behind by the light created when the universe was only 400,000 years old and could explain why time seems to move in a single direction, when logic says it should be reversible. The CMB fills the entire space of the universe in all directions and although it is generally relatively smooth, it does contain some temperature fluctuations that are associated with the galaxy clusters we see today in the visible universe. The same fluctuations could be evidence of the fact that the current universe inflated from a previous one, says Dr Adrienne Erickcek from the California Institute for Technology. According to Erickcek and her colleagues, the data provided by NASA's Wilkinson Microwave Anisotropy Probe points towards a scenario in which the current universe suddenly expanded into space. "A universe could form inside this room and we'd never know", said the co-author of the study Professor Sean Carroll at the American Astronomical Society, because the phenomenon would be rather unspectacular. The study originally started as an attempt to explain why time moves only in one direction. Carroll says that although the laws of physics allow time to be completely reversible on the microscopic scale, on the macroscopic scale this never happens. It is widely believed that this is a consequence of the second law of thermodynamics, which states that a system will always evolve from a low to a high entropy, simply put, from a highly ordered system to complete disorder. It basically says that the universe began its life in an ordered state. "Every time you break an egg or spill a glass of water you're learning about the Big Bang", said Professor Carroll. The theory of the Caltech team is just emerging, thus there is still much work to be done before it comes on solid ground. One of the first things would be to calculate the probability of one universe being created from another. The WMAP measurements are already pointing towards possible evidence of the presence of a previous structure from a parent universe, since temperature fluctuations in the CMB radiation appear to be about 10 percent stronger on one side of the universe. "We're trained to say there was no time before the Big Bang, when we should say that we don't know whether there was anything - or if there was, what it was", Professor Carroll added. If the theory is proven correct, it would be the first time when evidence of the past history of the universe before the Big Bang is revealed.