

# Pretty wild theory

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- *From:* Rich <[none@xxxxxxx](mailto:none@xxxxxxx)>
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A distant supernova that exploded 41,000 years ago may have led to the extinction of the mammoth, according to research that will be presented tomorrow (Sept. 24) by nuclear scientist Richard Firestone of the U.S. Department of Energy's Lawrence Berkeley National Laboratory.

Firestone, who conducted this research with Arizona geologist Allen West, will unveil this theory at the 2nd International Conference "The World of Elephants" in Hot Springs, SD. Their theory joins the list of possible culprits responsible for the demise of mammoths, which last roamed North America roughly 13,000 years ago. Scientists have long eyed climate change, disease, or intensive hunting by humans as likely suspects.

Now, a supernova may join the lineup. Firestone and West believe that debris from a supernova explosion coalesced into low-density, comet-like objects that wreaked havoc on the solar system long ago. One such comet may have hit North America 13,000 years ago, unleashing a cataclysmic event that killed off the vast majority of mammoths and many other large North American mammals. They found evidence of this impact layer at several archaeological sites throughout North America where Clovis hunting artifacts and human-butchered mammoths have been unearthed. It has long been established that human activity ceased at these sites about 13,000 years ago, which is roughly the same time that mammoths disappeared.

They also found evidence of the supernova explosion's initial shockwave: 34,000-year-old mammoth tusks that are peppered with tiny impact craters apparently produced by iron-rich grains traveling at an estimated 10,000 kilometers per second. These grains may have been emitted from a supernova that exploded roughly 7,000 years earlier and about 250 light years from Earth.

Our research indicates that a 10-kilometer-wide comet, which may have been composed from the remnants of a supernova explosion, could have hit North America 13,000 years ago, says Firestone. This event was preceded by an intense blast of iron-rich grains that impacted the planet roughly 34,000 years ago.

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In support of the comet impact, Firestone and West found magnetic metal spherules in the sediment of nine 13,000-year-old Clovis sites in Michigan, Canada, Arizona, New Mexico and the Carolinas. Low-density carbon spherules, charcoal, and excess radioactivity were also found at these sites.

“Armed with only a magnet and a Geiger counter, we found the magnetic particles in the well-dated Clovis layer all over North America where no one had looked before,” says Firestone.

Analysis of the magnetic particles by Prompt Gamma Activation Analysis at the Budapes