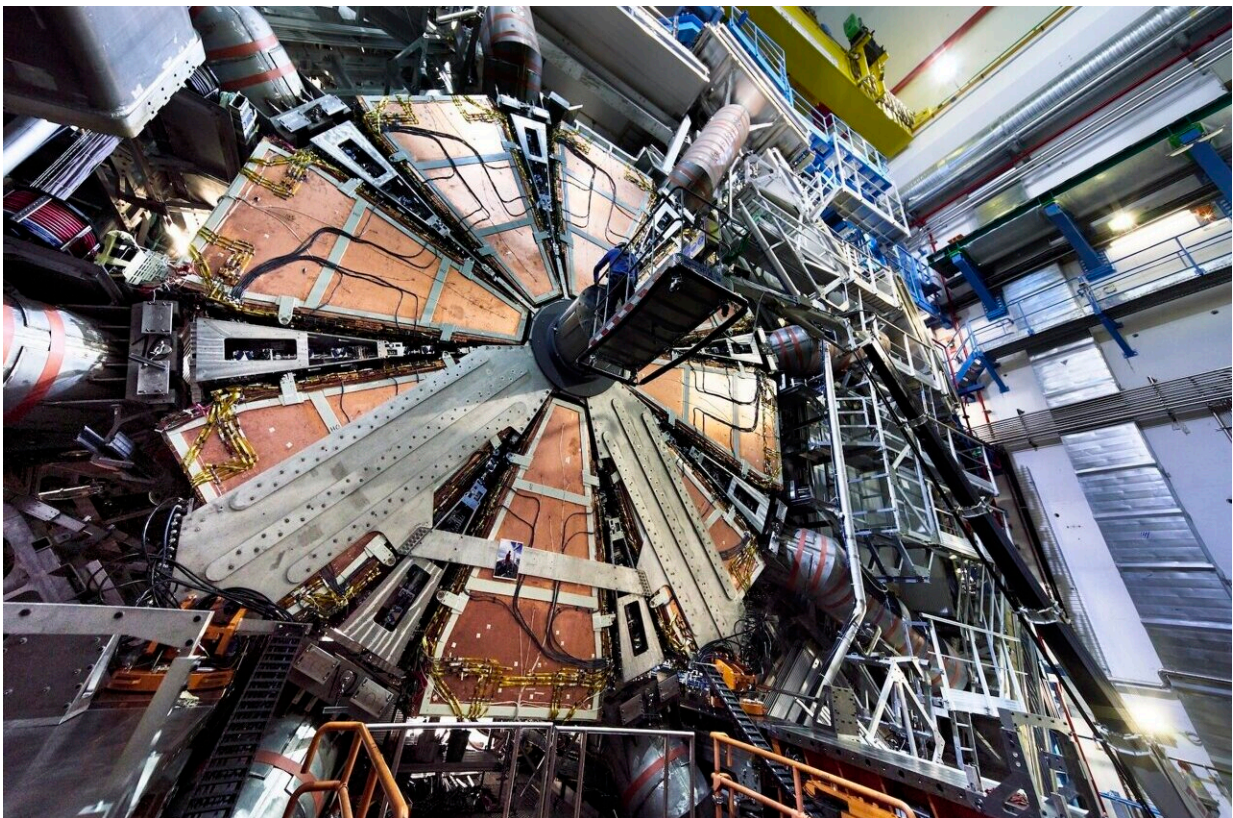


# Saturday Citations: Disproving string theory; interstellar comet arrives; lemurs age gracefully

July 12 2025, by Chris Packham

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ATLAS's wheel-like end-cap reveals the maze of sensors primed to catch proton smash-ups at the LHC. Researchers comb through billions of events in search of fleeting "ghost" tracks that might expose cracks in string theory. Credit: CERN

Well, it's July 12, which means (a) the Steam Summer Sale is over and (b) it's really hot outside in the northeastern U.S. This week, researchers discovered a [cool new fish](#) and named it after Darth Vader. [An analysis of the DART mission](#) suggests that while it proved that an impactor could alter the trajectory of an asteroid, it ejected boulders in unpredictable directions that could complicate other impactor missions. And archaeologists uncovered a [rock art panel](#) that could depict an elite individual from the First Dynasty.

Additionally, physicists want to try disproving string theory at the LHC; ATLAS spotted the third-known interstellar object entering the solar system, a comet that may be 7 billion years old; and a study of lemurs sheds light on human "inflammaging," chronic inflammation that causes the onset of aging-related pathologies:

## **Creating matter from energy to disprove string theory**

String theory is useful because it reconciles the [standard model of particle physics](#) and [general relativity](#) with its underlying hypothesis: that all particles, including theoretical particles representing gravity, are tiny strings vibrating across multiple dimensions. But it's a framework that can probably never be tested because when you ask a physicist how to prove it, they offer thought experiments in Neil deGrasse Tyson voice like "imagine you had a particle accelerator the size of the Milky Way Galaxy." So I guess string theory can someday be validated through the power of imagination.

But could there be a way to disprove string theory? Researchers at the Large Hadron Collider are [trying to determine where string theory fails](#): If collider results reveal something specifically barred by string theory, the whole theory is fundamentally flawed or incomplete. They're focusing on a subgroup of particles called 5-plets, and specifically, the Majorana fermion, a theorized particle that is also its own antiparticle.

The family of 5-plets are completely absent from string theory, which can't accommodate them. However, the difficulty of identifying a Majorana fermion lies in the tremendous energy required to produce them. The chances of creating one drop dramatically as the energy increases. And even if the collider does produce one, detecting it would be challenging since such massive particles decay and vanish rapidly.

But the identification would serve two purposes: First, it would disconfirm [string theory](#) as a model of the universe. And second, it would answer longstanding questions about the nature of dark matter.

## **Third interstellar tourist arrives**

On July 1, the ATLAS telescope in Chile spotted the [third-known interstellar object to enter the solar system](#), a water-rich comet called 3I/ATLAS. Researchers say it could be more than 7 billion years old, much older than the solar system. Its trajectory suggests it originated in the Milky Way's thick disk, a region of old stars above and below the thin disk in which the solar system resides. Comets produced around a thick disk star would be likely to contain water.

Initial observations suggest that 3I/ATLAS is larger than the 1I/'Oumuamua, spotted in 2017, and 2I/Borsov, spotted in 2019. As it approaches closer to the sun, it will start outgassing vapor, and it may already be active. The Vera C. Rubin Observatory, now starting survey operations, is expected to discover between five and 50 interstellar visitors in the future, according to predictions of the frequency of such objects.

## **Aging lemurs feel great, better than ever, why do you ask?**

In the last decade, researchers have made correlations between inflammation and the aging process, developing evidence for a process they've called "inflammaging." Essentially, the idea is the chronic, low-grade inflammation develops with advanced age and could contribute to age-related pathologies, including the development of heart disease, strokes, diabetes and cancer. Researchers have been studying low-grade [chronic inflammation](#) and its effects on brain health, aging, healthspan, and even psychological issues like depression.

In a [new study](#) involving ring-tailed lemurs and sifaka lemurs, researchers at Duke University discovered that the species show no age-related changes in markers of oxidative stress. "Contrary to our predictions, neither species showed age-related change in either marker of oxidative stress. Neither lemur species exhibited age-related change in inflammation; if anything, contrary to our prediction, ring-tailed lemurs showed marginal declines in inflammation with age," says biologist Elaine Guevara. The finding suggests that lemurs avoid "inflammaging" as experienced by humans and demonstrates that it isn't a universal feature of primates.

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