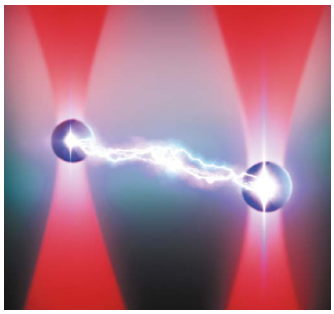
News in brief



NANOPARTICLES 'LEVITATED' USING LASER BEAMS

Physicists have suspended tiny glass spheres in a vacuum and made them interact at close range (J. Rieser *et al*. *Science* **377**, 987–990; 2022). The 'levitating' nanoparticles can be manipulated with very high precision, offering the prospect of probing quantum physics on the macroscopic scale.

If the particles can be slowed to their quantum ground state — as cold as they can get — it could become possible to put them into a state of quantum entanglement, meaning that some of their measurable properties, such as their positions, are more strongly correlated than would be allowed by the laws of classical, non-quantum physics.

To levitate the particles, researchers bounced a laser off a liquid-crystal panel inside a vacuum chamber, which split the beam into two. Next, they injected the 200-nanometre-wide glass spheres into the chamber until a sphere was caught in the focal point of each laser beam. By adjusting the liquid-crystal panels, the researchers could bring the two focal points closer together (artist's impression pictured).

"This is certainly an important milestone which opens up new opportunities," says Romain Quidant, a physicist at the Swiss Federal Institute of Technology in Zurich.

MEDIEVAL BURIAL MYSTERY SOLVED

Genomic analysis suggests that human remains recovered from a medieval well in Norwich, UK, were probably those of Jews murdered in the twelfth century (S. Brace *et al*. *Curr. Biol*. https://doi.org/gqqr7x; 2022).

After bones were found at the site in 2004, investigations revealed a well that held the remains of 17 people. The dead were suspected to have been victims of violence, disease or famine, but their identity had not been firmly established.

Radiocarbon dating showed that the bodies were deposited between 1161 and 1216, a period encompassing a documented massacre of Jews in Norwich in 1190 (pictured, a medieval antisemitic caricature). Researchers compared the DNA of six individuals with genomes from more than a dozen modern western Eurasian groups. The data hinted that the six were more closely related to today's Ashkenazi Jewish populations, with roots in northern and eastern Europe, than to modern non-Jewish populations in England.

The DNA also showed that the Norwich victims were predisposed to some genetic conditions that are prevalent in modern Ashkenazi Jews.

The Norwich Jewish community buried the remains after an earlier, less conclusive DNA analysis; the latest study provides more definitive results.

FEMUR SUGGESTS ANCIENT HUMAN RELATIVE WALKED UPRIGHT

A battered fossil leg bone discovered more than 20 years ago in Chad is finally making its scientific debut. Researchers say that the remains, described in *Nature*, show that a species called *Sahelanthropus tchadensis* was an ancient human relative that walked on two feet (G. Daver *et al*. *Nature* **609**, 94–100; 2022).

At seven million years old, *S. tchadensis* is a candidate for the earliest known member of the hominin lineage — the evolutionary branch that leads from the common ancestor of humans and chimpanzees to modern humans.

A French and Chadian team discovered *S. tchadensis* in July 2001, during an expedition in the Lake Chad basin. The key find was a nearly complete, but heavily damaged, skull.

The femur fragment was first noticed only in 2004, by graduate student Aude Bergeret-Medina at the University of Poitiers in France, according to Roberto Macchiarelli, a palaeoanthropologist there. He supervised Bergeret-Medina and agreed with her assessment that the bone probably belonged to *S. tchadensis*.

In 2020, a team including Macchiarelli and Bergeret-Medina published a brief description of the femur. Their preliminary analysis concluded that the remains probably did not belong to a species that routinely walked upright.

In the paper now describing the femur, alongside two arm bones, a team led by Poitiers palaeoanthropologist Franck Guy comes to the opposite conclusion. The group contends that more than a dozen features of the femur suggest that *S. tchadensis* walked on two feet, and the ape-like arm bones suggest that its species would also have been comfortable clambering in trees.

"It is great that these specimens are finally published officially, since their presence has been known to a lot of us," says Yohannes Haile-Selassie, a palaeoanthropologist at Arizona State University in Tempe. He says the description "clearly shows that the femur assigned to *Sahelanthropus* here had most of the morphology that one would expect to see in a habitual biped", and confirms that *Sahelanthropus* was a hominin.

L TO R: EQUINOX GRAPHICS; NATL ARCHIVES (E 401/1565); FRANCK GUY/PALEVOPRIM/CNRS – UNIV. POITIERS