

PARTICLE PHYSICS

Two mesons make an exotic atom

Scientists have discovered an exotic atom formed from two specific types of meson, which consist of only a quark and an anti-quark, instead of the three quarks found in constituents of normal matter.

Mesons are unstable particles produced in high-energy collisions and can be used to test the quantum theory of the strong force, which holds quarks together. To generate dimesonic atoms, physicists working on the DIRAC experiment, based at CERN, the European particle-physics laboratory near Geneva, fired a proton beam at thin sheets of platinum or nickel. The team detected roughly 350 atoms consisting of a π meson and a K meson, the first statistically significant detection of such an exotic atom.

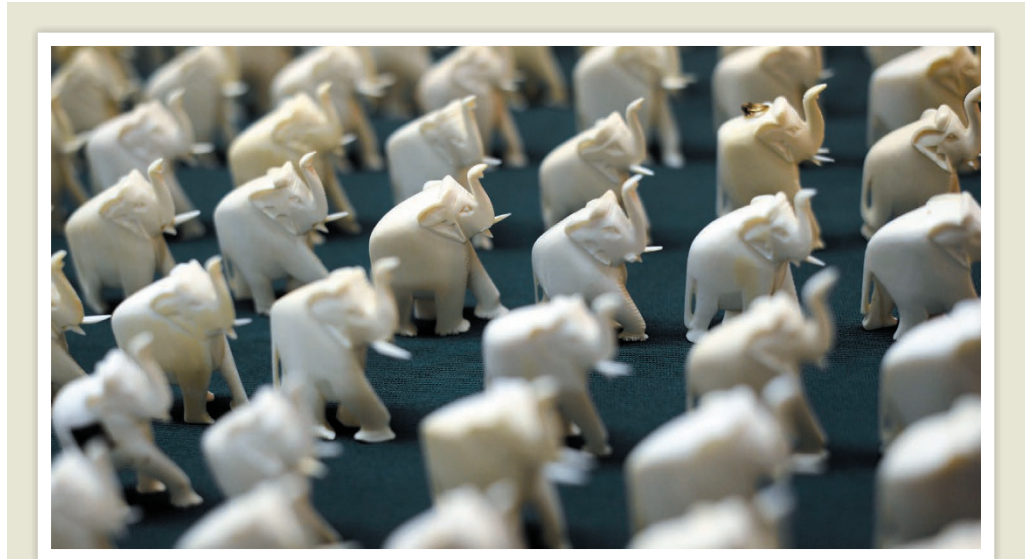
Phys. Rev. Lett. 117, 112001 (2016)

ANTHROPOLOGY

Same sounds for similar meanings

Unrelated languages often use the same sounds when referring to particular concepts, such as the 'n' sound for 'nose'.

Researchers have tended to assume that spoken language is arbitrary, with no link between a word's sound and meaning. Damián Blasi at the University of Zurich in Switzerland and his colleagues statistically analysed the phonetic sounds in common words from 62% — more than 4,000 — of the world's languages. The team found evidence for 74 sound–meaning associations. For instance, the term for 'round' was often linked to the sound 'r', and tongue with 'l' or 'e'. These associations were found



KEITH BEDFORD/REUTERS

CONSERVATION

Legal ivory trade would be unsustainable

Legal ivory harvesting from African elephants would never meet consumer demand and could not resume in a sustainable way.

Despite an international trade ban in 1989, poaching for ivory remains rampant and is even increasing, triggering heated debates about whether legal trading could help to reduce illegal harvesting (seized illegal ivory charms pictured). David Lusseau at the University of Aberdeen and Phyllis Lee at the University of Stirling, both in the United Kingdom, modelled how much

ivory could sustainably be removed from a population of 1,360 elephants. They found that a population of this size could feasibly support an annual take of 100–150 kilograms of ivory. However, roughly 600 kg per year would be needed for such a population to meet its share of global demand, based on the current estimated illegal poaching level.

Conservation efforts should focus on curbing consumer demand for ivory, the authors say. *Curr. Biol.* <http://doi.org/bqn6> (2016)

across continents and language families, suggesting that they emerged independently.

During language evolution, humans have intuitively linked sounds with certain key concepts, the authors suggest. *Proc. Natl Acad. Sci. USA* <http://doi.org/bqnd> (2016)

NEUROSCIENCE

Neurons' roles vary by sex

A class of nerve cell has different effects on social and anxiety-related behaviours in male and female mice in response to a hormone

involved in social interaction.

Many social and emotional disorders seem to disproportionately affect a particular gender — anxiety disorders, for example, are more common in women. To investigate this, Nathaniel Heintz and his colleagues at the Rockefeller University in New York City activated neurons that are sensitive to the hormone oxytocin in the medial prefrontal cortex of the mouse brain. This did not affect males' sociality, but did reduce anxiety-related behaviours. In females, however, it made the animals more social without lowering anxiety-related

behaviours. The female mice also had more of a key stress hormone in the brain, which probably blocked the anti-anxiety effects of oxytocin that were seen in males.

Further studies could lead to gender-specific therapies for social disorders. *Cell* <http://doi.org/bqpp> (2016)

BIOENGINEERING

Yeast makes diesel-like fuels

A yeast has been engineered to produce industrially important oils, including some similar to diesel.