

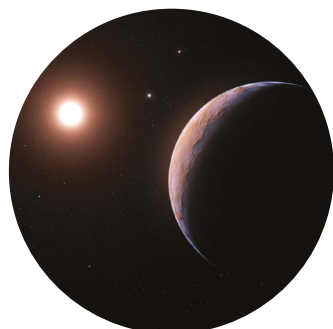
News in brief

EARTH-LIKE PLANET SPOTTED ORBITING SUN'S CLOSEST STAR

Astronomers have discovered a third planet orbiting Proxima Centauri, the star closest to the Sun. Called Proxima Centauri d, the newly spotted world is probably smaller than Earth, and could have oceans of liquid water.

Astronomer João Faria and his collaborators detected Proxima Centauri d by measuring tiny shifts in the spectrum of light emitted by the star as the planet's gravity pulled at it during orbit. The team used a state-of-the-art instrument called the Echelle Spectrograph for Rocky Exoplanets and Stable Spectroscopic Observations at the Very Large Telescope, a system of four 8.2-metre telescopes at the European Southern Observatory in Cerro Paranal, Chile. The results were published on 10 February (J. P. Faria *et al. Astron. Astrophys.* **658**, A115; 2022).

"It is fascinating to know that our Sun's nearest stellar neighbour is the host to three small planets," says Elisa Quintana, an astrophysicist at NASA's Goddard Space Flight Center in Greenbelt, Maryland. "Their proximity make this a prime system for further study, to understand their nature and how they likely formed."



NEW UPPER LIMIT FOR ELUSIVE NEUTRINO'S MASS

Physicists are one step closer to nailing down the mass of the neutrino, perhaps the most mysterious of all elementary particles.

The team at the Karlsruhe Tritium Neutrino (KATRIN) experiment in Germany reports that neutrinos have a maximum mass of 0.8 electronvolts (The KATRIN Collaboration *Nature Phys.* **18**, 160–166; 2022). There is indirect evidence that the particles should be lighter than 1 electronvolt, but this is the first time that this has been shown in a direct measurement.

KATRIN (pictured) weighs neutrinos produced by the nuclear decay of tritium, a radioactive isotope of hydrogen. When a tritium nucleus decays into a helium one, it ejects an electron and a neutrino. The neutrino is lost, but the electron is channelled into a 23-metre-long, blimp-shaped steel vacuum chamber, where its energy is measured precisely.

The electron carries almost all of the energy released during the tritium's decay, but some is lost with the neutrino. The value of this shortfall can be used to calculate the particle's mass.

KATRIN has so far been able to put only an upper bound on the neutrino's mass. But researchers say that it might be able to make a definitive measurement once it finishes collecting data in 2024.

Guinea worm disease nears eradication

Only 14 cases of infection with Guinea worm – a parasite that causes painful skin lesions – were reported in humans in 2021, sparking hope that the disease could soon be eradicated. The tally is the lowest ever for an infection that, as recently as the 1980s, was found in more than 20 countries and infected 3.5 million people a year (see 'On the way out'). "It's pretty amazing," says Adam Weiss, director of the Guinea Worm Eradication Program of the Carter Center, which is headquartered in Atlanta, Georgia. The centre announced the numbers in late January.

The reduction – a drop of close to 50% compared with the 27 cases reported in 2020 – is the result of a near 40-year effort by international organizations and national governments to rid the world of Guinea worm, says Weiss. If the initiative succeeds, the condition will join smallpox and rinderpest (a virus that infected mainly cattle and buffalo) as the only diseases to have been purposefully eradicated in human history.

There is no recognized treatment or vaccine for the parasite. Instead, eradication campaigns have focused on preventing transmission. But, a remaining reservoir for the parasite in animals means eradication could be a while off, if indeed it is possible, say some scientists.

ON THE WAY OUT

Guinea worm disease is one of eight conditions that the International Task Force for Disease Eradication thinks could be eradicated in coming decades, considerably improving quality of life for millions of the world's poorest people.

