to the Moon. As well as testing how space affects human physiology and technology, researchers will propose ways in which the station could support planetary studies and allow for innovative physics and astronomy experiments, says Carpenter.

MOON-BOUND AND BEYOND

The workshop will showcase a host of physics experiments that not only would exploit the environment, but might also become economically viable only by piggybacking off the platform's power and navigation capabilities. These include a meteoroid-environment monitor, which would study the drifting interstellar dust that never reaches Earth owing to the planet's magnetic field. A low-frequency radio observatory could be used to pick up radiation from the Universe's 'dark ages', between 40,000 and 100 million years after the Big Bang — which is hugely challenging on Earth because of interference from human sources and the planet's ionosphere, says Mark Bentum, a physicist at the University of Twente in Enschede, the Netherlands.

A space station near the Moon would afford lunar scientists regular access to its surface, says Mahesh Anand, a planetary scientist at the Open University in Milton Keynes, UK. Water has been confirmed on the Moon in the past decade, but scientists still know little about where it is, how much there is and how feasible it would be to extract. Crew aboard an orbiting laboratory would also be able to control lunar rovers in real time, and could study Moon rock without the need to return samples to Earth.

"The space station is an instrument for human experience and, almost, space diplomacy."

Others are seeking to develop technology for deep-space travel. Armin Gölzhäuser, a physical chemist at Bielefeld University in Germany, wants to test the potential of nanometre-thick carbon nanomembranes, made from fused aromatic molecules, for potential use as long-lasting, thin and efficient filters that could recycle wastewater or air. Meanwhile, biochemist Katharina Brinkert at the California Institute of Technology in Pasadena and her colleagues have designed a device to boost the solar-assisted production of hydrogen and oxygen, optimized for use in microgravity.

Political interest in the platform is growing. In September, NASA signed a joint agreement with Roscosmos, its Russian counterpart, which outlined such a platform as part of the agencies' "common vision for human exploration". The Japanese and Canadian space agencies are also involved. Both NASA and ESA have already contracted with industry partners to undertake preliminary work.

But if and when the project moves forward will depend largely on NASA's new administrator. James Bridenstine, a Republican member of the US Congress from Oklahoma, has been nominated for the role but has yet to be confirmed for the post. If the Deep Space Gateway is to launch as planned in the mid-2020s, key decisions need to be made by the end of 2019, says Parker. ■

PUBLISHING

German row with Elsevier threatens journal access

Negotiations to reduce journal prices and promote open access are progressing slowly.

BY QUIRIN SCHIERMEIER

Around 200 German universities will lose their subscriptions to Elsevier journals within weeks, because negotiations have failed to end a long-term contract dispute.

The conflict between Elsevier, the world's biggest publisher of scientific journals, and Germany's entire university system has dragged on since 2015. Academics in the country lost access to Elsevier content briefly early this year, but it was later restored while contract talks resumed.

Advocates of open-access publishing worldwide say that victory for the German universities would be a major blow to conventional models of scientific publishing based on subscription fees. Germany's firm stand in the battle to reduce subscription prices and promote immediate open access could herald profound changes to the global landscape of scholarly publishing, they say.

"There is no doubt that what the German universities are asking for is the direction of travel for scholarly publishing," says Paul Ayris, pro-vice-provost of library services at University College London. "If Germany achieves this with Elsevier, other countries will want to follow suit."

Negotiators with 'Project DEAL', a consortium of university libraries and research institutes, have been in talks with Elsevier for more than two years. They want a deal that would give most scientists in Germany full online access to 2,500 or so Elsevier journals, at about half the price that individual libraries have paid in the past. Open access is proving to be the sticking point in the talks: under the deal sought, all corresponding authors affiliated with German institutions would be allowed to make their papers free to read and share by anyone in the world at no extra cost. ▶

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NATURE PODCAST

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"Publishers' old business models aren't up to date any more," says Horst Hippler, president of the German Rectors' Conference and a spokesman for Project DEAL. "Results of scientific research must be open to the public, and the costs of open access must be affordable."

Research institutions and funders worldwide are adopting open-access policies. An analysis published in August, led by information scientists Heather Piwowar at the University of Pittsburgh in Pennsylvania, and Jason Priem, who runs an online service that promotes open science, found that 28% of the global scholarly literature is freely available in some form, including in university repositories (H. Piwowar *et al. PeerJ* **5,** e3119v1; 2017). The growth rate of open-access articles is much higher than that of articles behind paywalls (J. P. Tennant *et al. F1000Research* **5,** 632; 2016).

The Free University of Berlin is part of a consortium negotiating with Elsevier.

HANNIBAL HANSCHKE/REUTERS

INTERNATIONAL TALKS

In September, a Finnish university consortium that sought a nationwide contract with Elsevier reached a preliminary understanding with the company, after lengthy negotiations and a temporary strike by peer reviewers. Details of the agreement have yet to be disclosed, but sources say that it will include both reduced journal prices and permission for some articles by Finnish authors to be made freely available at no charge.

Gerard Meijer, a Dutch physicist now at the Max Planck Society's Fritz Haber Institute in Berlin, was involved in negotiating open-access deals with Elsevier in the Netherlands in 2015. One deal allows scientists at 14 Dutch universities to make 30% of papers in selected journals open access without extra costs. "This was the maximum we were able to achieve at the time," he says. "With hindsight, I think we should have pushed harder."

Some 19% of research articles published in 2016 that included a German author were published in an Elsevier journal, says Hannfried von Hindenburg, a spokesman for Elsevier. "We recognize the urgency of achieving 100% gold open access, and we are happy to support that goal as much as we can," he says. The challenge is to make the transition sustainable for all parties. Asking national consortia to pay for subscription fees and for open-access publication "can be quite expensive for countries like Germany with a large research output", says von Hindenburg.

Germany is also negotiating an open-access deal with Springer Nature, Nature's publisher. (*Nature*'s news team is editorially independent of its publisher.) To buy more time, both sides agreed in October to a one-year extension of all existing contracts that are due to end on 31 December. ■