SUBSCRIPTION SHUTDOWN

The stand-off was sparked by talks between Elsevier and Projekt Deal, which is pushing to create a collective subscription agreement to replace the individual deals each institution has held with the publisher.

This new type of deal would offset the cost of publishing under open-access terms against the price paid for subscriptions to paywalled journals. These 'read and publish' contracts have become popular in recent years, as governments in some European countries have tried to make the fruits of publicly funded science open to all.

Academic library consortia in Austria, the Netherlands, the United Kingdom, Sweden and Finland have all struck read-and-publish deals with various publishers — including Wiley, Springer Nature and Taylor and Francis — that cover varying parts of their portfolios. (*Nature*'s news team is editorially independent of its publisher, Springer Nature.) Last month, the Massachusetts Institute of Technology in Cambridge became the first US institution to enter into one, covering journals published by the UK Royal Society of Chemistry. But some national consortia are now coming up against fierce resistance to such contracts from Elsevier.

In May, talks collapsed between Elsevier and the Swedish Bibsam Consortium, which brokers deals on behalf of 85 institutions across the country. Their existing contract expired on 30 June, and some researchers in Sweden have now lost access to all Elsevier journal articles published after this date.

TOUGH COMPROMISE

Negotiators in Germany and Sweden want all their papers published in Elsevier journals to be open access as part of any new contracts. They have said that they will not pay more than they did previously for subscriptions. But, until now, the Dutch publisher has offered other countries read-and-publish deals that cover only a small proportion of a country's publishing output.

Apart from a brief shutdown in early 2017, which affected about 70 German institutions, Elsevier has provided mostly uninterrupted access to German institutions whose contracts have expired, while negotiations continue. Around 200 are thought to be affected by the latest switch-off, according to Projekt Deal.

The affected universities and research institutes can still source missing Elsevier articles through inter-library loans from the 150 or so institutes whose contracts have not yet expired.

The pressure on Elsevier to accept a read-and-publish contract is increasing, says Bernhard Mittermaier, head of the central library at the Jülich Research Centre in Germany and a member of the Projekt Deal negotiating team. He sees the widespread shift to 'gold' open access — whereby journals make papers freely available once published — as inevitable. "Publishers would be well advised to take it into their own hands and flip by themselves," he says. "Science in Germany will not break down."

Esposito thinks that the German institutes have leverage over Elsevier because their researchers can access papers on the illicit sharing site Sci-Hub — but that does not necessarily mean that Elsevier will back down.

"The Germans insisted on conducting this negotiation in public," he says, which could lead to a no-deal scenario because other countries might now want the same. If the stand-off continues without resolution, Elsevier will be closely monitoring journal article submissions from researchers based in Germany, Esposito predicts. "If it drops sharply, Elsevier will likely reconsider its position." ■

EARLY UNIVERSE

Big Bang telescope finale is end of an era in cosmology

Collaboration behind Europe's Planck mission releases its final maps of the early Universe.

BY DAVIDE CASTELVECCHI

A transformative era in cosmological science ended last week when the European Space Agency's Planck telescope released its final maps of the early Universe. Planck was the last in a line of three major space telescopes to study the cosmic microwave background (CMB), the faint afterglow of the Big Bang, resulting in the most precise measurements yet of the age, geometry and composition of the cosmos. With space agencies in Europe and the United States hesitant to fund a follow-up mission, Planck looks set to be the last CMB-focused satellite for many years — marking a big change for cosmologists.

"There's a whole generation of young scientists who grew up with Planck," says cosmologist Jan Tauber, the mission's project scientist with the European Space Agency (ESA) in Noordwijk, the Netherlands.

For more than two decades, scores of ground-based and balloon-borne experiments have also studied the CMB. They have largely focused on mapping minute variations in the CMB's temperature across the sky to create charts of the Universe that have become the gold standard of cosmology. Planck, which collected data from 2009 to 2013, helped researchers to pin down the age of the Universe (about 13.8 billion years), its geometry (essentially flat) and its composition (95% dark matter and dark energy). In particular, the latest release solidifies an earlier prediction based on Planck data that the Universe should be expanding 9% slower than is currently observed (see go.nature.com/2jt0sbi).

"There's a whole generation of young scientists who grew up with Planck."

The temperature maps and the science they produced have been a "great achievement" but they don't have much more to give, says Peter Coles, a theoretical cosmologist at Maynooth University in Ireland who is not part of the collaboration.

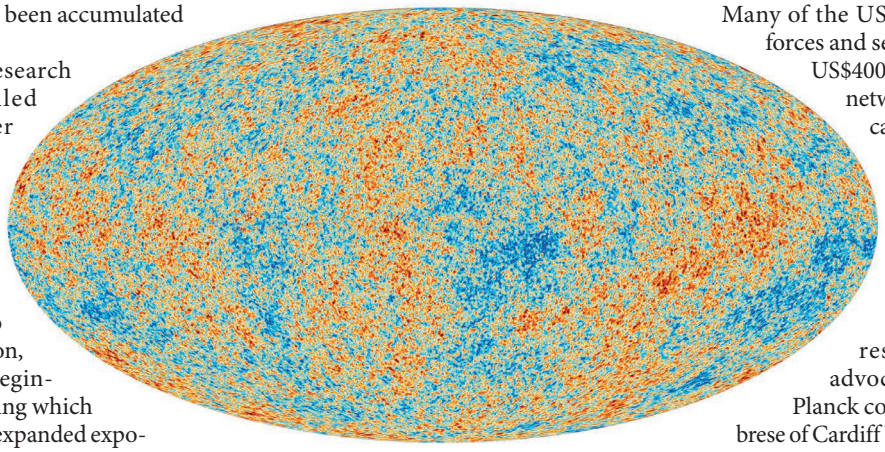
PLANCK DIASPORA

Many scientists who worked on the mission have already moved on to other projects. Silvia Galli, who help to lead the latest study, became part of Planck in 2013 after her PhD and is one of the few dozen scientists left. Now, she says she will probably join many of her colleagues who are working on Euclid, a major European mission to map the Universe's galaxies on an unprecedented scale that is preparing for launch in 2021. Euclid is an optical telescope, not a microwave detector, which makes it a technically different kind of mission. On a personal level, it is exciting to move on to new endeavours, she says.

But the prospect of no major CMB mission in the pipeline worries many researchers. "Scientifically, it would be a disaster," says Galli, who is based at the Institute of Astrophysics in Paris (IAP). "There is a risk that a lot of know-how ▶

and expertise that had been accumulated will be lost."

The focus of CMB research is now to make detailed measurements of other parameters, including polarization: a slight tendency for the microwaves' electromagnetic fields to align in particular directions. In this, researchers hope to find a signature of inflation, the brief period at the beginning of the Big Bang during which the Universe would have expanded exponentially. Planck mapped polarization — as did a NASA telescope in the 2000s — but with limited sensitivity. "Only 10% of the information in the polarization has been exploited," says Jacques Delabrouille, an astrophysicist at the University of Paris Diderot who helped to design Planck. "The CMB still has plenty of secrets to yield."



ESA/PLANCK COLLABORATION

The Universe's cosmic microwave background measured by the Planck satellite.

THE POLARIZATION PROBLEM

NASA and ESA have so far declined to fund big new satellites to study the CMB — although several US groups are working on ground and balloon instruments to measure polarization. One reason for space agencies' reticence to fund big CMB projects is that experiments have yet to find a polarization signature of inflation. An experiment called BICEP2 claimed to have detected that signature in 2014, but Planck data later showed that it was just dust in the Milky Way. In the latest studies, the Planck collaboration also looked for an inflation signature but didn't detect one. However, "the fact that we haven't seen it yet doesn't mean that it's not there", says cosmologist Richard Gott of Princeton University in New Jersey.

Many of the US teams are now joining forces and seeking funding to build a US$400-million, next-generation network of ground telescopes called CMB-S4, which will be much more sensitive to the inflation signature than anything that has come before. That's the next big thing on the horizon, Tauber says.

And many CMB researchers continue to advocate for space missions. Planck cosmologist Erminia Calabrese of Cardiff University, UK, is pushing for Europe to join LiteBIRD, a proposed Japanese probe that would look for the signature of cosmic inflation while keeping costs down. From space, it would have the advantage of seeing the entire sky — something that cannot be done from the ground.

Other cosmologists are trying to jump-start CMB-polarization research in Europe. Davide Maino, a senior Planck member at the University of Milan in Italy, is collaborating on an Italian-led polarization experiment that will be based on the Spanish island of Tenerife. If ground-based experiments see even a hint of inflation, that will encourage space agencies to fund major missions, researchers say. ■