

Achieving Open Access in Physics

We as physics societies exist to ensure that physics delivers on its exceptional potential to benefit society. We recognise the important role of universal access to knowledge in achieving this goal and are therefore committed to making open access (OA) to physics research a reality. We welcome the increased policy momentum towards open science publishing but urge all stakeholders to ensure that the routes by which we achieve OA preserve the diversity, quality and financial sustainability of the peer-reviewed publishing upon which our research community depends.

Physics has long embraced open science and OA to research results. Physicists were among the first to share preprints via *arXiv* (1991), launch fully OA journals such as *Optics Express* (1997) and *New Journal of Physics* (1998), and implement innovative OA business models like *SCOAP³* (2014). We continue to invest in launching high-quality OA journals, such as *Physical Review X* and *Optica*, and have established a range of transformative agreements¹ with institutions to facilitate their transition to OA. Over the past decade, such proactive engagement has resulted in an average annual growth in OA physics articles of more than 25%, compared with an overall average annual growth in physics articles of around 2%².

Whilst there has been considerable progress in creating fully OA physics journals, more than 85% of all physics articles continue to be published in hybrid journals³. Hybrid journals therefore still have an essential role to play in balancing the expansion of OA with preserving researchers' freedom to publish in the most appropriate journal for their research. The ability of these journals to transition sustainably is challenged by the prospect of free and unrestricted distribution of accepted manuscripts without concomitant funding for the peer review and publication costs involved.⁴ We are concerned that policies such as the proposed Coalition S Rights Retention Strategy would undermine the viability of high-quality hybrid journals and mean that many physics researchers no longer have an adequate range of options or freedom of choice in where they publish their work.

¹ Arrangements that redirect an increased proportion of an institution's funds towards OA publishing, which may also be known as 'read and publish' or 'publish and read' agreements.

² This and other publication figures obtained from the Dimensions research data platform: <https://www.dimensions.ai/>

³ Hybrid journals operate on a subscription basis but enable researchers to publish individual articles on an open access basis with subscription costs adjusted to reflect any fees from open access articles.

⁴ Before any articles are even accepted for publication, journal editorial teams engage with their research communities to develop an appropriate scientific scope and direction for the journal, and to maintain an active, engaged and informed editorial board and network of peer reviewers. The editorial teams coordinate efficient and rigorous peer review in accordance with the latest standards for publication ethics and research integrity and utilise ever-evolving online editorial systems. These activities require trained, professional staff supported by increasingly complex technologies, as well as the necessary management, legal, financial and administrative overheads.

Of course, any future without fees for readers of research would require the costs of the scholarly publication system to be funded entirely by the producers of research or other institutional sponsors. Broader global financial support for OA will need to be in place before most hybrid physics journals can viably transition – for instance, the current proportion of paid OA physics articles produced by EU member states is around twice that of India or Russia. Adjustments to the global flow of funding will take time.

In the meantime, we are fortunate in physics to have a thriving culture of sharing early-stage results, prior to peer review, via preprint platforms such as *arXiv*. There remains considerable opportunity to expand public access to research rapidly, even in physics⁵, if funders increase their recognition and encouragement for this practice as a complement to peer-reviewed journal publication.

Physicists will continue to innovate in OA and open science, and physics societies endorse any and all OA models that can provide financially sustainable support for author choice and the quality of peer review and publication upon which excellent physics research relies.

Signatories

Angela Keyser on behalf of the American Association of Physicists in Medicine

Lisa Keefe on behalf of the American Crystallographic Association

Michael Moloney on behalf of American Institute of Physics

Kate Kirby on behalf of American Physical Society

Petra Rudolf on behalf of European Physical Society

Paul Hardaker on behalf of Institute of Physics

Elizabeth Rogan on behalf of The Optical Society (OSA)

Michael Graham on behalf of The Society of Rheology

Beth Cunningham on behalf of the American Association of Physics Teachers

Amy Walker on behalf of AVS Science & Technology of Materials, Interfaces, and Processes

Daniel Dumbacher on behalf of the American Institute of Aeronautics and Astronautics

Susan Fox on behalf of the Acoustical Society of America

Nathaniel Quick on behalf the Laser Institute of America

Kevin Marvel on behalf of the American Astronomical Society

Stephen O'Connor on behalf of Institute of Physics and Engineering in Medicine

Jie Zhang on behalf of the Chinese Physical Society

⁵ *arXiv* has served several sub-disciplines of physics for around 30 years yet the overall number of physics preprints deposited each year remains less than half the number of published physics journal articles.