

An ocean of code

 Check for updates

We highlight recent developments at the journal, with new editors joining the team and the roll-out of a platform to facilitate the peer review of code.

Editorials in our journal are typically written about a month before they appear in print. As our team sat down at the beginning of the year and contemplated what 2025 would bring, we looked for a positive note to start on. Therefore, we would like to introduce and clarify our new options for peer reviewing code, and welcome two new members to our team.

Code is essential to a great deal of research in physics. Whether it is used to control an experiment, analyse data, or simulate physical phenomena, it is important to verify that it functions as expected. Turning a critical eye on code during the peer review process can help to clarify issues and spot mistakes that could prevent lengthy debates after publication or even lead to a retraction of the paper itself.

For some time, the *Nature Portfolio* policy has required authors of manuscripts in which newly developed code significantly underpins the main findings to declare this and, if necessary, make the code available to peer reviewers. Now, we have two features that streamline this process.

The first is that upon submission, authors can declare that they have developed specific code and can provide a private (or public) link to a dedicated repository. This link will be passed to the referees, and they will be explicitly asked to comment on whether they could successfully download, compile, and run the code, and whether they have any technical concerns about its implementation. There is now an additional response box on our peer review submission form to facilitate this.

The second feature is that we now offer the option to upload code to a platform called Code Ocean, and the reviewers will be given access to the resulting capsule that contains



a pre-installed environment to test the code in. Authors can receive support directly from Code Ocean to help them set up this capsule. Naturally, the code remains private during peer review, but if the paper is accepted for publication the capsule will be published along with the paper, enabling similar access for readers. The capsule can be licensed as the authors choose, and they will retain the rights to and control over it. An example is this code capsule <https://doi.org/10.24433/CO.8904065.v2>, which accompanied a recent paper in *Nature Machine Intelligence*¹.

It should be said that the Code Ocean option will not work for all papers. The computing resources associated with the capsule are limited, and therefore codes that require specialist hardware or long computation times may not be suitable for peer review with this platform.

This initiative is also not intended for the review of large packages that are centrally maintained and in continuous development.

Peer review of code in that mould is rather difficult to execute, not least because it could be prohibitively time-consuming for referees. This also would not fit easily into the criterion that the code is newly developed. Therefore, we are mainly targeting the small-to-medium scale, independently developed codes that might not have been through the full scrutiny of code review during development.

The definition of 'newly developed' is also a little difficult to make concrete. Therefore, for now we are content to leave it up to individual researchers to determine for themselves if their work fits the criterion.

Many other researchers in other disciplines share and review code much more openly than physicists do (on average). We hope that these two methods for facilitating peer review can start to nudge a culture change in the direction of more openness where it is feasible.

Finally, we are overjoyed to welcome two new editors to our team. Dr Lishu Wu, who joined the team in January, comes from a background of optical probes of two-dimensional materials and has been an editor at *Nature Reviews Electrical Engineering*. She is based in Shanghai and will handle papers on condensed matter physics and quantum optics.

And completing the team, Dr Sonal Mistry has been handling our optics and photonics content since the beginning of February. She has a broad scientific background, having spent time working within the Accelerator Department at the Daresbury lab and the Helmholtz-Zentrum Berlin. She is based in our Berlin office.

With these additions, our team grows to nine people – the largest our editorial group has ever been. We are looking forward to what 2025 and the coming years have to bring!

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References

1. Zhang, H. et al. *Nat. Mach. Intell.* <https://doi.org/10.1038/s42256-024-00972-x> (2025).