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2 avenue Augustin Fresnel
91127 Palaiseau Cedex, France

Florence HADDOUCHE
General Secretary of the SFO
florence.haddouche@institutoptique.fr

Publishing Director

Jean-Paul Duraud, General Secretary of the French Physical Society

Editorial Staff

Editor-in-Chief
Nicolas Bonod
nicolas.bonod@edpsciences.org

Journal Manager
Florence Anglézio
florence.anglezio@edpsciences.org

Editorial secretariat and layout
Agence la Chamade
<https://agencelachamade.com/>

Editorial board

Marie-Begoña Lebrun (Phasics),
Adeline Bonvalet (CNRS),
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Aurélien Jullien (CNRS),
Patrice Le Boudec (IDIL Fibres Optiques),
Christophe Simon-Boisson (Thales LAS France).

Advertising

Bernadette Dufour
Cell phone + 33 7 87 57 07 59
bernadette.dufour@edpsciences.org

Photoniques is hosted and distributed by **EDP Sciences**,
17 avenue du Hoggar,
P.A. de Courtaboeuf,
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Editorial



NICOLAS BONOD
Editor-in-Chief

Shaping the Future with a European Strategic Vision in Photonics

Over the last two decades, integrated photonics have burgeoned into a robust ecosystem, with both academia and industry witnessing remarkable progress. The advent of Photonic Integrated Circuits (PIC), with their promise for large-scale integration of heterogeneous components on a chip, heralds a new era in photonics. As integration scales up, the range of applications expands, addressing critical fields such as all-optical information processing and computing, health monitoring and environmental sensing, lidars, while optical communications will continue to propel PIC technology forward. It is imperative for Europe to spearhead this transformation and to secure a leadership position in this strategically vital field. Photoniques continues its exploration of photonics programs and landscapes across European countries, with Italy taking the spotlight in this issue. Presenting the entire ecosystem – encompassing education, academia, industry, programs, organisms – in a single article is no small feat. I extend my heartfelt thanks to the three authors of this article for sharing their complementary views and perspectives. The upcoming 2024 EOSAM meeting in Napoli next September will provide an excellent opportunity to release this issue, and I look forward to seeing you there.

Photoniques offers original articles, now fully available in free access, presented in a format that enables a comprehensive understanding of crucial concepts, products, and innovations in photonics. I encourage you to read the three articles of this issue in strong connection with quantum technologies. Firstly, the “Buyer’s guide” is dedicated to Single-Photon Avalanche Diodes (SPADs) that have revolutionized single-photon detection by combining high performance with affordability. Secondly, the “Back to basics” provides an insightful overview of parametric processes for harnessing quantum light and in particular SPDC and SFWM. Lastly, the “Labwork” focuses on the seminal experiment on single-photon interference reported in 1987 by Hong, Ou, and Mandel, a set-up in which SPDC and single photon detectors play a key role. The excellence of Europe in optics and photonics was recognized by the 2023 Nobel Prize in Physics awarded to European researchers – Anne L’Huillier, Ferenc Krauss, and Pierre Agostini. Do not miss the in-depth interview with Anne L’Huillier featured in this issue. Europe has a long experience in optics and photonics, and possesses many assets to reinforce its leadership position. This should motivate further our ambition to position Europe at the forefront of photonics research and technology.

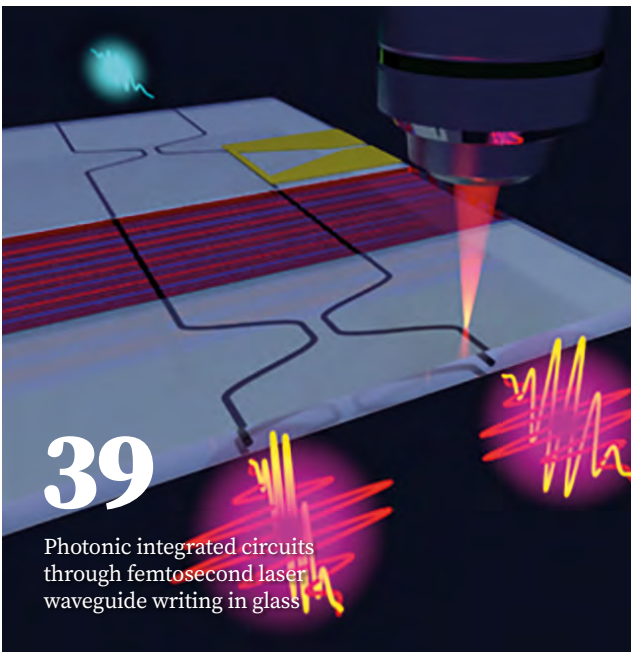


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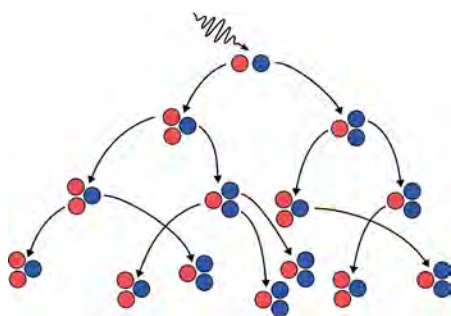
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SFO/EOS forewords



FRANÇOIS SALIN

President of the French Optical Society

The International Day of Light, ... all the Year!

The International Day of Light, May 16th, is approaching, and the SFO is actively engaged in extensive initiatives to make light shine everywhere.

Our iconic LightBox is on the way! A brief reminder of the LightBox philosophy: it is an educational and popularization kit for light sciences, with a cost-effective, frugal science approach. Adaptable to all audiences, it may evolve incorporating outcomes from local projects. LightBox kits are currently distributed in 11 countries thanks to a network of 30 colleagues serving as "points of contact" who help local actors to develop original projects. Already 65 successful implementations were reported, and more than 250 others are ongoing. Kudos to our partner and initiator, the AtoutSciences Association! We express deep admiration and gratitude to colleagues who generously contribute their time to promote the merits of light. In recognition of outstanding achievements in disseminating knowledge within French-speaking territories, the SFO has created the "Lumières Arnulf – Françon" International Prize. The inaugural award ceremony will take place at OPTIQUE Normandie 2024 congress, with the presence of the international jury.

Indeed, OPTIQUE Normandie 2024 is on the horizon, in the picturesque city of Rouen. We eagerly anticipate reconnecting with familiar faces and extending a warm welcome to new ones. SFO Clubs and Commissions are actively in crafting an impressive scientific program. Industrial exhibition stands are almost booked, and several interesting additions include six hands-on workshops hosted by industry players. We are also delighted to announce an enhanced role for the SFO Youth Club, featuring a Science and Society round table. We anticipate a strong turnout and assure you that you won't be disappointed – our great Chairs, Ammar Hideur from CORIA and Patrice Camy from CIMAP, are putting "les petits plats dans les grands" to ensure a memorable experience.

Ariel Levenson,
Directeur de recherche CNRS, Past-President of SFO
François Salin,
President and CEO Ilisis Laser, President of SFO



PATRICIA SEGONDS

President of the European Optical Society

Join EOSAM 2024 organized with SIOF at Napoli !

Each year, EOS organizes with one of the National Optical Society (NOS), an Annual Meeting in a different place across Europe. In 2024, the Società Italiana di Ottica e Fotonica (SIOF) and EOS will make EOSAM a unique event again, 9th -13th September, in the beautiful city of Napoli.

Raffaele Velotta, University of Naples Federico II and Luca De Stefano, President of SIOF (General Chairs), Emiliano Descrovi and myself (Program Chairs), and Elina Koistinen (EOS Executive Director), come together every week to ensure to meet the expectations of the participants with the highest quality and novel research results and to provide nice networking events.

Exceptional plenary lectures will be given at EOSAM2024 by Hatice Altug, Anna C. Peacock, Claudio Conti, Miles Padgett, Fredrik Laurell and Kishan Dholakia. Tutorials will be taught by Sebastian Riese, Oliver Föhnle, Jacopo Bertolotti, Ignacio Moreno Soriano, Francesca Intonti, Alberto Puliafito, Katerina Kusova, Giovanni Pellegrini, Luca Sortino, Stefania Campopiano and Dawson Bonnevill. The attendees will present their last results in 10 Topical meetings (TOMs): silicon photonics & integrated optics (1), frontiers in optical metrology (2), optical system design, tolerancing & manufacturing (3), biophotonics & biosensors (4), nanophotonics (5), optical materials (6), ultrafast phenomena (7), nonlinear & quantum optics (8) optoelectronics, nanotechnologies & microsystems (9), applications of optics & photonics (10). There will be also focused sessions on holography and structured light, optical fibers technology, passive radiative cooling, photonics for cultural heritage and machine-learning for optics and photonic computing for AI. Extended papers can be submitted to the topical issue EOSAM2024 of the Rapid Publication Journal JEOS-RP. Last but not least, EOSAM also welcomes you to EU projects sessions run with Photonics21, Early-Stage Research sessions organized by students, IMOTS sessions and the Industrial podium. EOS organization will report their work at the Annual General Assembly.

Do not miss EOSAM2024 in Napoli !
Patricia SEGONDS, Professor UGA, President of EOS



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