

Report to IUPAP from the International Committee on Ultra-High Intensity Lasers (ICUIL)

August 2026

This report summarizes ICUIL activities and developments since the previous report to IUPAP, with emphasis on the 2024–2025 period and priorities for the coming term.

1. Overview and mission

The International Committee on Ultra-High Intensity Lasers (ICUIL), established as IUPAP Working Group 7 in 2003, serves the international community in the fields of ultra-high-intensity laser science, technology, facilities, applications, and education. Its core objectives are international coordination; the biennial ICUIL conference and related workshops; exchange of expertise and personnel; training of students and early-career researchers; broader participation, including the Global South; equity, diversity and inclusion; and links with related scientific fields and industry.

2. ICUIL 2024 Conference and regional outreach

ICUIL 2024 was held on 9–13 September 2024 in Cozumel, Mexico, the first ICUIL conference in Latin America. More than 140 participants attended, with eight plenary lectures, 21 invited talks, 31 contributed oral presentations, and 45 posters. A Latin American Workshop brought together researchers from Brazil and Mexico to discuss regional cooperation. The meeting also coincided with the announcement of the first facility in the ICUIL network in the Global South, to be established at IPEN, University of São Paulo, Brazil.

3. IUPAP–ICUIL prizes and support for early-career scientists

At ICUIL 2024, the first IUPAP ICUIL Early Career Scientist Prize was awarded to Prof. Yang Wan (Zhengzhou University) for contributions to laser-plasma acceleration diagnostics and ion-acceleration physics. The first IUPAP Yoshiaki Kato Award, established in honour of ICUIL's first Chair, was awarded to Prof. Ulrich Schramm for major achievements in laser-driven particle acceleration and its applications. The prize program continues in 2026, with explicit encouragement of diverse nominations.

4. Communications and community networking

ICUIL continues to use its newsletter, website, conference series, facility network, and the General Assembly to share information across the community. These channels communicate facility capabilities, commissioning milestones, user opportunities, scientific results, and community activities to an international audience.

5. Scientific and facility landscape

The field is increasingly moving from peak-power demonstrations toward reliable multi-petawatt user operation. Growing emphasis is placed on repetition rate, beam quality, temporal contrast, synchronization, diagnostics, targetry, data handling, and reproducible delivery of secondary particle and radiation beams. ICUIL provides an international framework for exchanging experience as facilities and applications mature.

6. Training, access, diversity, and international participation

The increasing scale and complexity of ultra-high-intensity laser facilities create a growing need for trained scientists, engineers, operators, and users. ICUIL therefore places strong emphasis on practical training, mobility, access to facilities, and regional networking. Initiatives within the wider ICUIL network, including Lasers4EU and THRILL, illustrate the importance of coordinated access and workforce development. The 2024 conference in Mexico and the Latin American Workshop were important steps toward stronger engagement with the Global South, encouraging diversity in leadership, speakers, prize nominations, and community representation.

7. Forthcoming activities

ICUIL will continue working with IUPAP on its organizational transition and Terms of Reference; strengthen reporting and financial procedures; maintain and improve communications and the global facility network; support early-career researchers and regional communities; and develop closer interactions with industry and related international scientific organizations.

8. Concluding remarks

ICUIL remains a vigorous international community amid rapid scientific, technological, and geographical expansion. Its role has evolved from coordinating an emerging field to supporting a mature global ecosystem of facilities, university laboratories, users, technology developers, and industrial partners. ICUIL looks forward to continuing its collaboration with IUPAP to support scientific excellence, training, inclusive participation, and the responsible development of ultra-high-intensity laser science and technology.