

Editorial

The 5th edition of STELLA, the School for Training in Experiments with Lasers and Laser Applications, took place at the Insubria University laser-laboratory premises, in Como, Italy, starting on June 20, 2011. Previous editions were hosted by the Laser Research Center in Vilnius (2001, 2007), the FORTH Institute of Electronic Structure and Lasers in Heraklion (2008) and the ICFO Institute for Photonic Sciences in Barcelona (2009). During three weeks of full immersion activities, several cutting-edge experiments in linear, nonlinear, classical and quantum optics were staged directly in research labs, for training purposes. They involved fs laser microfabrication (J. Dudley-Besançon), XUV generation (J. Biegert-ICFO), space-time pulse characterization (G. Tamosauskas-Vilnius), SLM beam shaping (M. Padgett-Glasgow), entanglement and Bell inequalities (P. Mataloni-Rome), thermal-light quantum statistics (M. Chekhova-Erlangen), Fourier-space microscopy (R. Cerbino-Milan), random-media speckle frequency correlation (F. Sheffold-Fribourg) and single-molecule fluorescence spectroscopy (R. Rigler-Stockholm), being completed by an advanced numerical course on intense fs-pulse propagation (A. Couairon-Paris and M. Kolesik-Tucson).

The major novelty that characterizes the present edition with respect to previous ones has been a practical training course on paper writing. Its outcome, *i.e.* 11 publications on the original results achieved by the working groups involving students during their lab works, represents the content of the present EPJ ST special issue. Notably, the output of evaluation questionnaires directed to students and professors

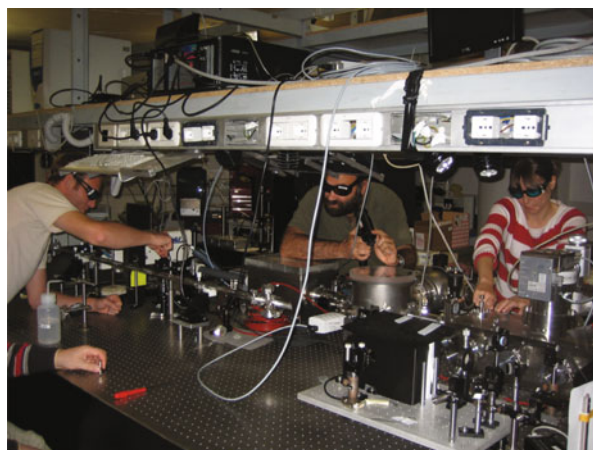


Fig. 1. Alignment of the XUV-generation setup.



Fig. 2. The STELLA-2011 team at Insubria University in Como.

is also reported and discussed, as a relevant contribution for a short-term evaluation of the project.

STELLA represents the first training-in-research event where leading experts from several renowned research institutions gather in a single location, bring their own research equipment with them, and share their knowledge about experimental setups, alignment tricks, measurement details, errors to avoid *etc.*, with a number of students coming from all over the world (Europe, Russia, Canada, South America, India, Australia, Singapore, Iran, for the present year).

The long-term aim of the action is to build a permanent international network with the participation of universities, research institutions, laser-optics enterprises and, of course, the young-scientist community, which is capable of supporting the sharing of state-of-the-art technical know-how among laboratories active in the field. The demand of such a joint effort in education follows from the increasing complexity of laser sources, diagnostics, measurements and modeling techniques, which makes several small-sized laboratories inadequate to cover the necessary training programs for young employed personnel.

The driving idea behind STELLA is simple, being the same one that has seeded the birth of universities in the Middle Ages: *the inherent unity between research and education*. In other words, the proposed concept of “School” stems from the experience that *“a discovery begins when two or more people start sharing it.”*

To this end STELLA has challenged students, professors, assistants and local organizers to set up original experiments and computational works, thus tackling the achievement of genuine scientific results along with the realization of a didactic route. The preparation activities, jointly performed by guest-professors, assistants and local organizers, lasted almost one year, and this effort is accordingly reflected in the papers published in this issue. These activities were performed both at Insubria University, where a substantial amount of ad hoc equipment has also been purchased, and at the guest-professors institutions, where several components were developed and tested. Laser and optics enterprises have also provided an important contribution by sponsoring the initiative with expensive demo equipment and laser assistance.

In this scenario, the teaching that STELLA organizers wanted to share with the students during the performance of the school is that *every research moment, no matter how limited in time, inherently bears in itself a discovery*. This emerges when one has the courage to face a single detail moved by the urgency of communicating what he/she has observed. That's why STELLA training cannot be separated from research.

Starting from Friday the second week and during the entire third week of the school, each student worked at writing a scientific publication on the research achieved in one of the two courses he/she had attended. The activity was mainly supervised by local organizers, with the constant advice of guest professors and their assistants, most of whom joined it remotely from their home institutions. Notably, professors had provided students with a written introduction prior to starting the school work. In so doing, students were able to contribute to the writing with to data analysis, result presentation and interpretation. The peer-review process was conducted by professors and their assistants, keeping all students in copy.

In attending STELLA, all participants had the chance of verifying and proposing, to the international laser-optics community, a novel approach to high education and research. This de-emphasizes competition among groups in view of a true enhancement of knowledge levels.

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