

## PPLA2017 International Conference, PREFACE

**L. Torrisi<sup>1</sup> and M. Cutroneo<sup>2</sup>**

<sup>1</sup>*Dipartimento di Scienze Matematiche, Informatiche, Scienze Fisiche e Scienze della terra (MIFT)  
dell'Università di Messina, V.le F. Stagno d'Alcontres 31, 98166 S. Agata (ME), Italy*

<sup>2</sup>*Nuclear Physics Institute, Center of Accelerators and Nuclear Analytical Methods (CANAM),  
AS CR, 25068 Rez, Czech Republic*

**Plasma Physics by Laser and Applications (PPLA)** is an international conference taking place every two years and involving the scientific community interested in plasmas generated by laser. After 7 editions, it was an honor for Messina to be host of the last prestigious event held in 2017. The organization of the PPLA 2017 was carried out by the organizing committee (OC) consisting of : Prof. L. Torrisi,-chairman, Dr. R. De Angelis, Prof. D. Giulietti, Prof, V. Nassisi and Prof. F. Neri. The conference was co-financed by the University of Messina, Center of Accelerators and Nuclear Analytical Methods (CANAM), Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile (ENEA), Italian National Institute for Nuclear Physics (INFN), the Physics Department of the Pisa University and the Mathematics and Physics Department of the Lecce University.

University of Messina has supported the conference by the local Project “Research and Mobility” coordinated by Prof. L. Torrisi. The Sicily Region has supported the conference ceremony expenses.

The scientific PPLA program covers topics concerning the laser-matter interaction, plasma physics, theoretical models relative to laser plasmas, laser induced photons, electron and ion sources, plasma diagnostics and detectors, applications and technologies inherent the plasma use.

The program was developed in three effective days and consisted of 7 invited speakers, 22 oral and 50 poster contributions. Detailed information about the conference program and venue has been available on the webpage:

<http://www.ppla2017.it/> or contacting by email the secretary: [secretary@ppla2017.it](mailto:secretary@ppla2017.it)

All invited speakers presented the frontiers of laser matter interaction research. Their important contributions were : “Escaping Electrons from Intense Laser-Solid Interactions as a Function of Laser Spot Size”, by Prof. D. Neeley<sup>a)</sup>, “Nanoimaging using soft X-ray and EUV laser-plasma sources”, by Dr. P. Wachulak<sup>b)</sup>, “High repetition rate Petawatt lasers” by Prof. L. Roso<sup>c)</sup>, “Toward ultra-intense plasma based soft X-ray lasers” by Prof. S. Sebban<sup>d)</sup>, “Plasma Mirrors for Cleaning Laser Pulses from the Infrared to the Ultraviolet” by Prof. I. B. Foldes<sup>e)</sup>, “Aneutronic p-B Reaction in Magnetized Inertial Confined Plasma of Laser-Accelerated Particles”, by Prof. S. Guskov<sup>f)</sup>, “High intensity laser interactions with optically levitated microtargets” by Prof. R. A. Smith<sup>g)</sup>.



A **tutorial session** on various topics related to laser processing, plasma parameters, ions acceleration was organized. It consisted of three lectures given by three of the most important experts in Europe in this field. Prof. David Neely presented a lecture titled: “Emerging laser driven application source developments”; Prof. István B. Foldes: “High-harmonics and attosecond pulse generation from plasmas on solid surfaces”; Prof. Danilo Giulietti: “Laser Absorption and Electromagnetic Radiation in Laser Produced Plasmas”.



Prof. D. Neely<sup>a)</sup>, Prof. I.B. Foldes<sup>b)</sup>, Prof. D. Giulietti<sup>c)</sup>

The tutorial session, was especially addressed to the numerous young participants, undergraduates and PhD students, who participated enthusiastically to the conference, to introduce them to the basis of the laser-matter/plasma interaction phenomena.

Prof. S. B. Dabagov, the chair of one of the most successful conferences on "Charged & Neutral Particles Channeling Phenomena" co-financed by the INFN and the European Organization for Nuclear Research (CERN), presented a report on the channeling radiation, X-rays polycapillary optics and channeling of neutral and charged particles. Prof. Dabagov emphasized the synergy between CHANNELING and PPLA conferences hoping that it can be further increased by organizing together training seminars for students and scientists on the common interest themes. The first appointment will be scheduled at the next CHANNELING-2018 conference.



Prof. S. B. Dabagov

PPLA has been characterized by an increasing international participation of scientists. Roughly 100 researchers coming mostly from Europe, but also from other continents.



Some participating to PPLA 2017: Prof. S. Cuzzocrea on behalf of Rector of the University of Messina <sup>a)</sup>, Dr. M. Okamura<sup>b)</sup> (Brookhaven National Lab., USA), Prof. , A. Kozyrev<sup>c)</sup> (Institute of High Current Energy, RU) Prof. S. Gocheva-Ilieva <sup>d)</sup>(Technical Univ., BG), Prof. Aix Feng<sup>e)</sup>( Wenzhou Univ.,CN), Dr. M. Rosinski<sup>f)</sup> (IPPLM, PL), Prof. W. Nazarov<sup>g)</sup> (Dundee University, UK) Prof. P. Ossi<sup>h)</sup>( Milan Univ., IT).

The quality and variety of the contributions presented, ranging from particle acceleration to nuclear fusion, material science, biology and medicine demonstrated once again the central role played by laser plasma physics in modern science.

The **Leos Laska prize** was awarded to the best contribution by a young researcher. The prize is dedicated to the memory of Dr. Leos Laska from Academy of Science of the Czech Republic, prematurely passed away in 2013. The prize was delivered by Prof. L. Torrisi to Mr. G. Ceccio, PhD at the University of Messina (IT).



Prof. L. Torrissi, chairman PPLA 2017 and Mr. G. Ceccio winner of the Leos Laska prize 2017



The Local Organizing Committee (LOC)

The conference offered the participants several opportunities to interact friendly while enjoying the visit of Messina town, Taormina and Forza D' Agrò, among the most celebrated attractions of the Sicily Region .



Participants to the PPLA conference 2017

A special thanks to the sponsors: ARS, OSA, Sear, centro studi Diodoro and citta' Metropolitana Messina as well as to the PhD students in Physics and to the students of Physics Master's degree, and to all the technicians and administrative staff of the MIFT Physical Sciences Department of the University of Messina.

The next PPLA edition will take place in Pisa (Italy), hosted by the Physics Department of the University.

A large part of the presented contributions will be included in a dedicated issue of the European Physical Journal, after peer review.

Guest Editors

Prof. L. Torrisi

Dr. M. Cutroneo