

Anastasios Grigoriadis

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Research Interests

- Laser Wakefield Acceleration
 - Betatron x-ray generation
 - Laser Ion Acceleration
 - Plasma Diagnostics
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Education

PhD Candidate (11/18 – In progress)

Physics Department, University of Ioannina | Ioannina, Greece

Title: Particle acceleration with an ultra-intense laser

PhD Supervisor: Assistant Professor Emmanouil P. Benis

MSc in Plasma Physics & Applications (11/15 – 6/18)

Hellenic Mediterranean University| Chania, Greece
Institute of Plasma Physics & Lasers| Rethymno, Greece

Thesis title: Study of laser produced plasma during the interaction of 40 TW ultra-short laser pulses with solid and gas targets.
Supervisor: Professor Michael Tatarakis

BSc in Physics (9/10 – 2/16)

University of Ioannina | Ioannina, Greece

Thesis Title: Study of the applicability of the Intensity Selective Scanning (ISS) technique in the molecular dissociation of H_2^+ in interactions with strong laser fields.
Supervisor: Assistant Professor Emmanouil P. Benis

Contribution in Research Programs

Participation in research program co-financed by the European Regional Development Fund of the European Union and Greek national funds through the Operational Program Competitiveness, Entrepreneurship and Innovation, under the call RESEARCH – CREATE – INNOVATE (project code: T1EDK-04549, project title: Development of a coherent X-ray multispectral microscopy system). (8/21 – Today)

Participation in the research program HELLAS-CH, “ELI - LASERLAB Europe Synergy, HiPER & IPERION-CH.gr” (MIS: 5002735). Member of the research team for the interaction of ultra-short pulses with matter and the development of secondary plasma sources (6/18 – 12/18 & 7/19 – 12/19).

Funding

Grand co-financed by Greece and the European Union (European Social Fund-ESF) through the Operational Programme «Human Resources Development, Education and Lifelong Learning 2014-2020» in the context of the project “Development and optimization of a betatron type source generated by ultra-intense electromagnetic laser fields” (MIS 5048172) – PhD Scholarship (2/20 – 5/21).

Publications

- E.L. Clark, **A. Grigoriadis**, S. Petrakis, I. Tazes, G. Andrianaki, A. Skoulakis, Y. Orphanos, E. Kaselouris, I. Ftilis, J. Chatzakis, E. Bakarezos, V. Dimitriou, E. P. Benis, N. A. Papadogiannis and M. Tatarakis, “High intensity laser driven secondary radiation sources using the ZEUS 45 TW laser system at the Institute of Plasma Physics and Lasers of the Hellenic Mediterranean University Research Centre”, High Power Laser Science and Engineering, 1-28. doi:10.1017/hpl.2021.38, (2021).
- **A. Grigoriadis**, G. Andrianaki, M. Tatarakis, E.P. Benis, and N.A. Papadogiannis, “Betatron-type laser-plasma x-ray sources generated in multi-electron gas targets”, Appl. Phys. Lett. **118**, 131110 (2021).
- G. Andrianaki, **A. Grigoriadis**, E. P. Benis, and N. A. Papadogiannis, “Pointing characteristics of x-rays generated by relativistic electron acceleration via 45 tw fs laser-he plasma,” in The 22nd International Conference on Ultrafast Phenomena (Optical Society of America, 2020).
- J. Pasley, G. Andrianaki, A. Baroutsos, D. Batani, E.P. Benis, A. Ciardi, D. Cook, V.M. Dimitriou, B. Dromey, I. Ftilis, G. Gatti, **A. Grigoriadis** et al., ‘Innovative education and training in high power laser plasmas (PowerLaPs) for plasma physics, high power laser matter interactions and high energy density physics: experimental diagnostics and simulations’, High Power Laser Science and Engineering **8**, (2020).
- J. Pasley, G. Andrianaki, A. Baroutsos, D. Batani, E. P. Benis, M. Borghesi, E. Clark, D. Cook, E. D’Humieres, V. M. Dimitriou, B. Dromey, M. Ehret, I. Ftilis, **A. Grigoriadis** et al., ‘Innovative Education and Training in high power laser plasmas (PowerLaPs) for plasma physics, high power laser-matter interactions and high energy density physics - Theory and experiments’, High Power Laser Science and Engineering **7**, (2019).

International Conference Oral Presentations

‘Improving a High-Power Laser Based Relativistic Electron Source: The Role of Laser Pulse Contrast and Gas Jet Density Profile’. 47th Conference on Plasma Physics - Satellite Meeting, Virtual Event (28-29/6/21).

Posters

- **‘Simulations of the experimental research activities in IPPL’**, I. Tazes, K. Kaleris, J. F. Ong, O. Tesileanu, K. A. Tanaka, **A. Grigoriadis** et al., Towards understanding and modelling intense electronic excitation (COST Action CA17126 MEETING), 16-17 February 2020, Warsaw, Poland.
- **‘Novel gel dosimetry diagnostic for the secondary sources of ZEUS 45TW laser system at CPPL’**, E.L. Clark, **A. Grigoriadis** et al., 3rd European Conference on Plasma Diagnostics – ECPD2019, 6-9 May 2019, Lisbon, Portugal.
- **‘Secondary sources generated with the ZEUS 45TW laser system at CPPL’**, E. L. Clark, **A. Grigoriadis** et al., International Conference on Applications of Nuclear Techniques – Crete19, 9-15 June 2019, Rethymno, Greece.
- **‘Energetic particles source using the Zeus 45 TW laser at CPPL’**, Andrianaki G., **Grigoriadis A.** et al., 35th European Conference on Laser Interaction with Matter (ECLIM 2018), 22-26 October 2018, Rethymno, Greece.

- ‘CPPL and IMSLP Research Activities within HELLAS-CH Project’, Petrakis P., Andrianaki G., Bakarezos E., Clark E. L., Fitisilis I., **Grigoriadis A.** et al., 35th European Conference on Laser Interaction with Matter (ECLIM 2018), 22-26 October 2018, Rethymno, Greece.

Conference – Summer School Attendance

22nd International Conference on Ultrafast Phenomena, Optical Society of America, Virtual Event (16-19/11/20).

PowerLaPs: “Innovative Education & Training in High Power Laser Plasmas”

- Rethymno, Greece - Organizing and training “TW ultrafast laser” & “Laser matter interactions” & “ Plasma PIC simulations” labs (1-12/7/19).
- Salamanca, Spain (25-29/3/19)
- Rethymno, Greece - Organizing and training “TW ultrafast laser” & “Laser matter interactions” & “ Plasma PIC simulations” labs (1-13/7/18).

COST action CA17126: “Towards understanding and modelling intense electronic excitation” - Member of the Organizing Committee (23/9-4/10/19).

Eclim: 35th European Conference on Laser Interaction with Matter, Rethymno, Crete, Greece - Member of the Organizing Committee (22-26/10/18).

Computer Skills

Software Packages: Matlab, Mathematica, Origin Lab, IDEA, Arduino IDE

Simulation Codes: EPOCH Particle-in-Cell code

Programming Languages: C

Lab Experience

- Ultra-Intense fs laser technology.
- Electron Acceleration via the interaction of ultra – intense ($>10^{18}$ W/cm²) laser pulses with gaseous targets (LWFA).
- Ion Acceleration via the interaction of ultra – intense ($>10^{20}$ W/cm²) laser pulses interacting with solid targets (TNSA).
- Optical Plasma Diagnostics (Shadowgraphy, Interferometry).
- X-ray & XUV diagnostics.
- Higher order harmonic generation with fs laser pulses.
- Experience on high vacuum technology.
- TOF Spectroscopy.
- Experience on electronics and microcontrollers (arduino).

Languages

Greek (Native)

English (B2, Edexcel level 3:Pass (With Merit))