

Michael Tatarakis CV

Name: TATARAKIS Michael
Date of birth: 13 May 1967 (Rethymno, Crete, Greece)
Nationality: Hellenic
Education: Ph.D. (Physics department, Imperial College, University of London, 1997)
M.Sc. (Physics Department, University of Crete, 1993, 2-year course)
B.Sc. (Physics Department, University of Crete, 1990)
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h-index (scopus): 40

SUMMARY

Michael Tatarakis is an active researcher publishing in peer review journals of high impact factors, and he is an Editor and invited referee for many peer review journals (including journals of the American Physical Society, the American Institute of Physics and the Institute of Physics). His **h-index is 40** according to Scopus (<http://www.scopus.com>) or **43 according to Google Scholar** (<https://scholar.google.gr>). He has more than 200 publications in peer review journals, conference proceedings and contributions, among them more than 120 published in peer review journals, which have received more than **6200 citations** (source: Scopus – excluding self-citations of selected author). His publications include one publication in Nature, one in Nature Physics, one in Nature Communications and 22 publications in Physical Review Letters. Michael Tatarakis is **Topical Editor** of the journal High Power Laser Science and Engineering and reviewer in top journals of high impact factor such as Physical Review Letters (invited), Physics of Plasmas, Plasma Physics & Controlled Fusion, to Japanese Journal of Applied Physics/Institute of Physics (invited) and others.

CURRENT POSITION(S)

Currently: Professor, Faculty of Engineering/Department of Electronic Engineering, Hellenic Mediterranean University, Grete, Greece

Also: Director of Institute of Plasma Physics & Lasers, University Research Centre, Hellenic Mediterranean University

Also 2005 – present: **Honorary** Visiting Professor, Faculty of Natural Sciences, Department of Physics, Imperial College London, UK

05.2020 – present: Director of the “Institute of Plasma Physics & Lasers” (IPPL) of the University Research Centre of Hellenic Mediterranean University. IPPL is one of the two access points of the Hellenic National Research Laser Infrastructure HELLAS-CH.

06.2018 – present: Representative of Hellenic Mediterranean University at the General Assembly of the Hellenic Institution of Research & Innovation.

09.2008 – present: Member of the project management committee of HiPER-Europe, Head of the «Basic Science Programme» of the HiPER ESFRI project.

PREVIOUS POSITION(S)

06.2016 – 05.2020: Founder & Director of the “Centre for Plasma Physics & Lasers” (CPPL).

09.2013 – 08.2016: Member of the Research Committee of the TEI of Crete (now Hellenic Mediterranean University).

09.2010 – 08.2014: Dean of the School of Applied Sciences of TEI of Crete.

09.2009 – 08.2010: Head of Electronics Division of the Department of Electronics of TEI of Crete.

09.2009 – 08.2010: Vice president of the Department of Electronics of TEI of Crete.

09.2008 – 08.2009: Head of Electronics Division of the Department of Electronics of TEI of Crete.

09.2007 – 08.2008: Vice president of the Department of Electronics of TEI of Crete.

04.2004 – 08.2008: President of the Department of Electronics of TEI of Crete.

04.2004 – present: Elected Associate Professor at Department of Electronics, TEI of Crete (now Hellenic Mediterranean University). Currently Professor at Department of Electronics Engineering, Hellenic Mediterranean University

09.2003 – 02.2004: lecturer P.D. 407/1980, Technical University of Crete

05.2003 – 08.2003: Research Associate, Technical University of Crete

05.2002 – 04.2003: Marie Curie Return Research Fellow, Technical University of Crete

08.2001 – 03.2002: EPSRC Research Fellow, Department of Physics, Imperial College London

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08.1999 – 07.2001: Advanced Marie Curie Research Fellow, Department of Physics, Imperial College London
02.1999 – 08.1999: EPSRC Research Fellow, Department of Physics, Imperial College London
10.1997 – 01.1999: Research Associate, Department of Physics, Imperial College London

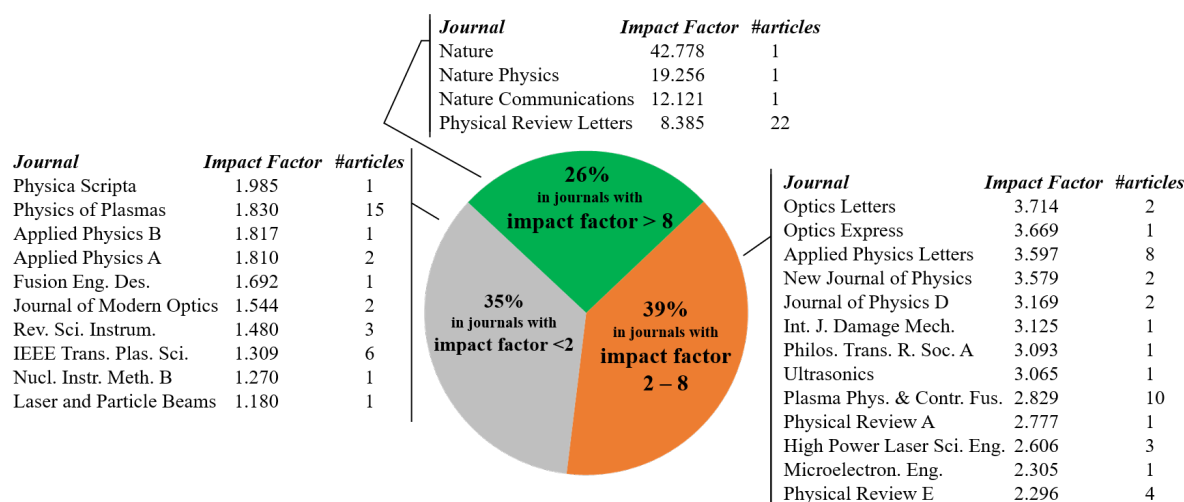
EDUCATION

11.1997: PhD, Thesis title: Optical Probing of Dense Z-pinch & Laser Produced Plasmas – Faculty of Natural Sciences, Department of Physics, Imperial College London
11.1993: MSc in Atomic & Molecular Physics, University of Crete, Crete, Greece (2 year course)
07.1990: BSc in Physics, Department of Physics, University of Crete, Crete, Greece

PUBLICATIONS

Full publication list can be found in <http://www.scopus.com> and in <https://scholar.google.gr> by simple search at authors name "Tatarakis M".

His publications in peer review journals are summarized below:



Some indicative publications:

1. "The importance of the laser pulse-ablator interaction dynamics prior to the ablation plasma phase in ICF studies" E. Kaselouris, I. Ftilis, A. Skoulakis, Y. Orphanos, G. Koundourakis, E.L. Clark, J. Chatzakis, M. Bakarezos, N.A. Papadogiannis, V. Dimitriou and **M. Tatarakis**, Phil. Trans. R. Soc. A (2020) DOI:10.1098, invited paper, under revision for publication
2. "A numerical study on laboratory plasma dynamics validated by low current x-pinch experiments" Koundourakis, G., Skoulakis, A., Kaselouris, E., Ftilis, I., Clark, E.L., Chatzakis, J., Bakarezos, M., Vlahakis, N., Papadogiannis, N.A., Dimitriou, V., and **Tatarakis, M.**, (2020) Plasma Physics and Controlled Fusion, 62 (12), art. no. 125012 DOI: 10.1088/1361-6587/abbebf
3. "Dynamics of the heat affected zone and induced strains in laser machining below ablation threshold", Kaselouris, E., Skoulakis, A., Ftilis, I., Orphanos, Y., Tazes, I., Kosma, K., Bakarezos, M., Papadogiannis, N., **Tatarakis, M.**, Dimitriou, V. (2020) IOP Conference Series: Materials Science and Engineering, 916 (1), art. no. 012050, DOI: 10.1088/1757-899X/916/1/012050
5. "Target normal sheath acceleration and laser wakefield acceleration particle-in-cell simulations performance on CPU & GPU architectures for high-power laser systems" Tazes, I., Ong, J.F., Tesileanu, O., Tanaka, K.A., Papadogiannis, N.A., **Tatarakis, M.**, Dimitriou, V. (2020) Plasma Physics and Controlled Fusion, 62 (9), art. no. 094005, DOI: 10.1088/1361-6587/aba17a
6. A study on the influence of laser parameters on laser-assisted machining of Aisi H-13 steel Kaselouris, E., Baroutsos, A., Papadoulis, T., Papadogiannis, N.A., **Tatarakis, M.**, Dimitriou, V. (2020) Key Engineering Materials, 827 KEM, pp. 92-97 DOI: 10.4028/www.scientific.net/KEM.827.92
8. "Hydrodynamic computational modelling and simulations of collisional shock waves in gas jet targets" Passalidis, S., Ettlinger, O.C., Hicks, G.S., Dover, N.P., Najmudin, Z., Benis, E.P., Kaselouris, E., Papadogiannis, N.A., **Tatarakis, M.**, Dimitriou, V. (2020) High Power Laser Science and Engineering, 8, art. no. e7, DOI: 10.1017/hpl.2020.5

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9. "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", Pasley J, Andrianaki G, Baroutsos A, Batani D... and **Tatarakis M**, High Power Laser Science & Engineering, 7, 23 (2019) DOI: 10.1017/hpl.2019.7
10. "Preliminary investigation on the use of low current pulsed power Z-pinch plasma devices for the study of early stage plasma instabilities", Kaselouris, E., Dimitriou, V., Ftilis, I., Skoulakis, A., Koundourakis, G., Clark, E.L., Chatzakis, J., Bakarezos, M., Nikolos, I.K., Papadogiannis, N.A., and **Tatarakis, M.**, (2018) Plasma Physics and Controlled Fusion, 60 (1), art. no. 014031, DOI: 10.1088/1361-6587/aa8ab0
11. "The influence of the solid to plasma phase transition on the generation of plasma instabilities", Kaselouris, E., Dimitriou, V., Ftilis, I., Skoulakis, A., Koundourakis, G., Clark, E.L., Bakarezos, M., Nikolos, I.K., Papadogiannis, N.A. and **Tatarakis, M.**, (2017) Nature Communications, 8 (1), art. no. 1713. DOI: 10.1038/s41467-017-02000-6
12. "Fast advection of magnetic fields by hot electrons" Willingale, L., Thomas, A.G.R., Nilson, P.M., Kaluza, M.C., Bandyopadhyay, S., Dangor, A.E., Evans, R.G., Fernandes, P., Haines, M.G., Kamperidis, C., Kingham, R.J., Minardi, S., Notley, M., Ridgers, C.P., Rozmus, W., Sherlock, M., **Tatarakis, M.**, Wei, M.S., Najmudin, Z., Krushelnick, K., (2010) Physical Review Letters, 105 (9), art. no. 095001.
13. "Temporally and spatially resolved measurements of multi-megagauss magnetic fields in high intensity laser-produced plasmas" Gopal, A., **Tatarakis, M.**, Beg, F.N., Clark, E.L., Dangor, A.E., Evans, R.G., Norreys, P.A., Wei, M.S., Zepf, M., Krushelnick, K. (2008) Physics of Plasmas, 15 (12), art. no. 122701.
14. "Quantitative two-dimensional shadowgraphic method for high-sensitivity density measurement of under-critical laser plasmas" Gopal, A., Minardi, S., and **Tatarakis, M.** (2007) Optics Letters, 32 (10), pp. 1238-1240
15. "Electron acceleration in cavitated channels formed by a petawatt laser in low-density plasma" Mangles, S.P.D., Walton, B.R., Tzoufras, M., Najmudin, Z., Clarke, R.J., Dangor, A.E., Evans, R.G., Fritzler, S., Gopal, A., Hernandez-Gomez, C., Mori, W.B., Rozmus, W., **Tatarakis, M.**, Thomas, A.G.R., Tsung, F.S., Wei, M.S., Krushelnick, K. (2005) Physical Review Letters, 94 (24), art. no. 245001.
16. "Ion acceleration by collisionless shocks in high-intensity-laser- underdense-plasma interaction" Wei, M.S., Mangles, S.P.D., Najmudin, Z., Wallon, B., Gopal, A., **Tatarakis, M.**, Dangor, A.E., Clark, E.L., Evans, R.G., Fritzler, S., Clarke, R.J., Hernandez-Gomez, C., Neely, D., Mori, W., Tzoufras, M., Krushelnick, K. (2004) Physical Review Letters, 93 (15).
17. "Propagation instabilities of high-intensity laser-produced electron beams" **Tatarakis, M.**, Beg, F.N., Clark, E.L., Dangor, A.E., Edwards, R.D., Evans, R.G., Goldsack, T.J., Ledingham, K.W.D., Norreys, P.A., Sinclair, M.A., Wei, M.-S., Zepf, M., Krushelnick, K., Physical Review Letters, 90 (17), pp. 175001/1-175001/4 (2003).
18. "Measuring huge magnetic fields" **Tatarakis, M.**, Watts, I., Beg, F.N., Clark, E.L., Dangor, A.E., Gopal, A., Haines, M.G., Norreys, P.A., Wagner, U., Wei, M.-S., Zepf, M., Krushelnick, K., , (2002) Nature, 415 (6869), p. 280.
19. "Measurements of ultrastrong magnetic fields during relativistic laser-plasma interactions" **Tatarakis, M.**, Gopal, A., Watts, I., Beg, F.N., Dangor, A.E., Krushelnick, K., Wagner, U., Norreys, P.A., Clark, E.L., Zepf, M., Evans, R.G. (2002) Physics of Plasmas, 9 (5), pp. 2244-2250.
20. "Measurements of the inverse Faraday effect from relativistic laser interactions with an underdense plasma" Najmudin, Z., **Tatarakis, M.**, Pukhov, A., Clark, E.L., Clarke, R.J., Dangor, A.E., Faure, J., Malka, V., Neely, D., Santala, M.I.K., Krushelnick, K. (2001) Physical Review Letters, 87 (21), art. no. 215004, pp. 2150041-2150044.
21. "Energetic heavy-ion and proton generation from ultraintense laser-plasma interactions with solids" Clark, E.L., Krushelnick, K., Zepf, M., Beg, F.N., **Tatarakis, M.**, Machacek, A., Santala, M.I.K., Watts, I., Norreys, P.A., Dangor, A.E., , (2000) Physical Review Letters, 85 (8), pp. 1654-1657.
22. "Measurements of Energetic Proton Transport through Magnetized Plasma from Intense Laser Interactions with Solids" Clark, E.L., Krushelnick, K., Davies, J.R., Zepf, M., **Tatarakis, M.**, Beg, F.N., Machacek, A., Norreys, P.A., Santala, M.I.K., Watts, I., Dangor, A.E. (2000) Physical Review Letters, 84 (4), pp. 670-673.

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23. "Measurement of forward Raman scattering and electron acceleration from high-intensity laser plasma interactions at 527 nm", Najmudin, Z., Allott, R., Amiranoff, F., Clark, E.L., Danson, C.N., Gordon, D.F., Joshi, C., Krushelnick, K., Malka, V., Neely, D., Salvati, M.R., Santala, M.I.K., **Tatarakis, M.**, Dangor, A.E. (2000) *IEEE Transactions on Plasma Science*, 28 (4), pp. 1084-1089.
24. "Effect of the plasma density scale length on the direction of fast electrons in relativistic laser-solid interactions" Santala, M.I.K., Zepf, M., Watts, I., Beg, F.N., Clark, E., **Tatarakis, M.**, Krushelnick, K., Dangor, A.E., McCanny, T., Spencer, I., Singhal, R.P., Ledingham, K.W.D., Wilks, S.C., Machacek, A.C., Wark, J.S., Allott, R., Clarke, R.J., Norreys, P.A. (2000) *Physical Review Letters*, 84 (7), pp. 1459-1462. DOI: 10.1103/PhysRevLett.84.1459
25. "Magnetic focusing and trapping of high-intensity laser-generated fast electrons at the rear of solid targets" Davies, J.R., Bell, A.R., and **Tatarakis, M.** (1999) *Physical Review E* 59 (5), pp. 6032-6036. DOI: 10.1103/PhysRevE.59.6032
26. "Plasma formation on the front and rear of plastic targets due to high-intensity laser-generated fast electrons" **Tatarakis, M.**, Davies, J.R., Lee, P., Norreys, P.A., Kassapakis, N.G., Beg, F.N., Bell, A.R., Haines, M.G., Dangor, A.E., (1998) *Physical Review Letters*, 81 (5), pp. 999-1002.
27. "Optical probing of fiber z-pinch plasmas" **Tatarakis, M.**, Aliaga-Rossel, R., Dangor, A.E., Haines, M.G. (1998) *Physics of Plasmas*, 5 (3), pp. 682-691. DOI: 10.1063/1.872778
28. "Neutron production from picosecond laser irradiation of deuterated targets at intensities of 10^{19} W cm⁻²" Norreys, P.A., Fews, A.P., Beg, F.N., Bell, A.R., Dangor, A.E., Lee, P., Nelson, M.B., Schmidt, H., **Tatarakis, M.**, Cable, M.D., (1998) *Plasma Physics and Controlled Fusion*, 40 (2), pp. 175-182. DOI: 10.1088/0741-3335/40/2/001
29. "A study of picosecond laser-solid interactions up to 10^{19} W cm⁻²" Beg, F.N., Bell, A.R., Dangor, A.E., Danson, C.N., Fews, A.P., Glinisky, M.E., Hammel, B.A., Lee, P., Norreys, P.A., and **Tatarakis, M.** (1997) *Physics of Plasmas*, 4 (2), pp. 447-457. DOI: 10.1063/1.872103
30. "X-ray emission from plasmas generated by 450 femtosecond excimer laser pulses", **Tatarakis, M.**, Beg, F.N., Lee, P., Dangor, A.E., Moustazis, S.D. (1997) *Physica Scripta*, 55 (6), pp. 651-653. DOI: 10.1088/0031-8949/55/6/003

CONFERENCES/WORKSHOPS/etc.

Michael Tatarakis has been invited in numerous international and national scientific conferences and symposia as invited speaker as well as to be member of scientific committees of conferences and symposia. Indicatively, only in the last 6 months he has been invited as a invited or as a plenary invited or honorable speaker in more than 20 conferences and symposia.

Michael Tatarakis is Invited Permanent Member of the International Scientific Committee of the prestigious European Conference on Laser Interaction with Matter (ECLIM).

Michael Tatarakis was the Lead Organizer & Chairman of ECLIM 2018, 22-26 October 2018, Rethymno, Crete, Greece.

Collaboration with other Universities & research organisations

Imperial College London, UK, Rutherford Appleton Laboratory, UK, Queen's University of Belfast, UK, University of Milano, Bicocca, Italy, University of Bordeaux 1, France, Technical University of Madrid, Spain, Czech Technical University of Prague, Czech Republic, University of Glasgow, UK, University of California, San Diego, USA, Foundation of Research & Technology Hellas (FORTH), University of Ioannina, Technical University of Crete.

REVIEWING ACTIVITIES

Michael Tatarakis is Topical Editor of the journal High Power Laser Science and Engineering and reviewer in top journals of high impact factor such as Physical Review Letters, Scientific Reports, Applied Physics B, Optics & Laser Technology, Journal of Fusion Energy, Nuclear Fusion, Plasma Physics & Controlled Fusion, Physics of Plasmas, Japanese Journal of Applied Physics and others.

TEACHING ACTIVITIES

1997-2020: Teaching of a large number of undergraduate & postgraduate courses (topics include Laser Matter Interactions, Plasma Physics, Optoelectronics, Acoustics) at Imperial College London, Technical University of Crete, Hellenic Mediterranean University. **Proposer & Director of the international MSc programme**

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“**Plasma Physics & Applications -PLAPA**” of the HMU (Evaluated and Funded by the Erasmus Curriculum Development Programme) as re-organised to **Lasers, Plasmas & Applications (LaPIA)**

Proposer & Coordinator of the evaluated International Erasmus Intensive Programmes (IP’s): 2005-2008: “Optoelectronics, Lasers & Applications” – OLA, 2009- 2012: “Applications of Electronics in Plasma Physics” - APPEPLA, 2013-2015: “An Introduction to High Power Light-Matter Interactions – HIPOLIN, and in Erasmus KA2 actions the project Innovative Education & Training in High Power Power Laser Plasmas LaPs 2017 – 2019.

SUPERVISION OF GRADUATE STUDENTS and POSTDOCTORAL FELLOWS

Supervision of PhD students:

Nanyang Technological University, (co-supervisor- two member committee): Subject: «Development and Studies of Plasma EUV Sources for Lithography», From 01/03/2007 until 28/02/2009 the research took place at CPPL under the supervision of Prof. Michael Tatarakis and was funded by the Marie Curie programme “Development of an Innovative X-ray source» with coordinator Prof. Michael Tatarakis: PhD Mr Sued Murtaza Hassan awarded the doctorate in January 2011

Technical University of Crete (three member committee): Subject: “Study of matter behavior dynamics by the interaction with laser pulses and external strong currents”

PhD Dr. Evangelos Kaselouris (PhD work took place at IPPL) Registration: 11-9-2012, Awarded 01-11-2016.

National and Kapodistrian University of Athens (three member committee): subject: «Magnetised jets in Astrophysics and in the Laboratory»

PhD candidate: George Kopundourakis (PhD work takes place at IPPL) Registration 8-4-2014 – preparing for viva

Hellenic Mediterranean University: Subject: “Experimental and Numerical study of particle acceleration using high intensity short laser pulses” (supervisor).

PhD candidate: Mr Ioannis Tazes

Registration 12-11-2019 – ongoing

Hellenic Mediterranean University: Subject: “Modelling of Electromagnetic Radiation of Antennas and microwave devices” (my participation is in the part of H/M radiation).

PhD candidate: Mr. Nikolaos Fragiadakis

Registration: 12-11-2019 – ongoing

University of Ioannina, Physics Department (three member committee): Subject: “Coherent, strong illuminance pulsed sources of XUV radiation generated by strong laser pulses”, PhD candidate” Mr Stelios Petrakis (PhD work takes place at IPPL)

Registration 13-6-2016 – ongoing

Technical University of Crete (three member committee): Subject: «Particle Acceleration Using a High Intensity Laser Facility», PhD candidate Mrs Georgia Andrianaki (the PhD work takes place at IPPL)

Registration 17-4-2018 – ongoing

University of Crete: PhD candidate: Ioannis Mathioudakis

Registration: 11-12-2019 – ongoing

Supervision of Post-Doctoral Fellowships:

Michael Tatarakis has supervised a large number of Post-Doctoral Fellows at Imperial College London, Technical University of Crete, TEI of Crete and Hellenic Mediterranean University also funded via the research grants listed at the section “Research Grants”.

RESEARCH GRANTS

| Project Title | Funding source | Period | Role |
|--|--------------------|----------------|-------------|
| “HELLAS-CH -“ELI - LASERLAB Europe Synergy, HiPER & IPERION-CH.gr” MIS 5002735 | EU-National | 2017 – present | Coordinator |
| “Strengthening the competitiveness of the region of Crete in cutting-edge medical applications using secondary | Periphery of Crete | 2017 – present | Coordinator |

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| laser plasma sources” KA-2017 EP40200006 | | | |
| “Innovative Education & Training in High Power Laser Plasmas” PowerLaPs 2017-1-EL01-KA203-036366 | European Erasmus ⁺ action KA2 | 2017 – present | Coordinator |
| Attractive REsearchers in the Spotlight - ARES | H2020-MSCA-NIGHT-2020 - 954021 | 2020 | Participant - Coordinator of the Hellenic Mediterranean University/IPPL participation. |
| National research infrastructure for HiPER” MIS 376841 | EU-National | 2012 – 2015 | Coordinator |
| “Design and development of a neutron source for the detection of explosive materials”, (MIS 380353, | European Social Fund & National funds Action Archimedes III | 2012 – 2015 | Coordinator |
| Multilateral Competitive Erasmus Lifelong Learning programmes (HIPOLIN, APPEPLA, OLA) | European Union - Erasmus | 2006 – 2015, | Coordinator |
| HiPER – European High Power laser Energy Research facility – preparatory phase study” | European Union ESFRI | 2010 – 2011 | Coordinator |
| Hellenic Network for the European Research Infrastructure HiPER” (MIS 303839) | European Regional Development Fund & National Funds | 2010 – 2011 | Coordinator |
| “DAIX – Development of An Innovative X-ray source” for the development of a Centre of Excellence via transfer of Knowledge (FP6-014423) | EU-Marie Curie | 2005 – 2009 | Coordinator |
| Magnetic field generation in ultra-high intensity laser solid Interactions FU05-CT-2002-50501 | EU-Marie Curie Return Grand | 01.05.2002-30.04.2003 | Marie Curie Grand Holder Proposer & Research Fellow Technical University of Crete |
| “Fast electron transport into thick solid targets in high intensity laser-solid interactions” ERB 5004-CT98-5010 | European Union – Advanced Marie Curie grant | 01.08.1999-31.07.2001 | Marie Curie Grand Holder Proposer & Research Fellow Imperial College London |
| Extension from grants “Relativistic Particle Generation From Ultra-Intense Laser Plasma Interactions” GR/R23909/01 & “Magnetic field generation and fast electron propagation in solids using relativistic laser irradiation” GR/M82936/01 | Extension from EPSRC, UK funding | extended by Imperial College London until 31.03.2002 | EPSRC Research Fellow Imperial College London |
| “Relativistic Particle Generation From Ultra-Intense Laser Plasma Interactions” GR/R23909/01 | EPSRC, UK | 01.02.1999-01.08.1999 | EPSRC Research Fellow Imperial College London |

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|---|-----------|-----------------------|---|
| “Laser Plasma Wave generation and electron acceleration” GR/L79151/01 | EPSRC, UK | 01.10.1997-31.01.1999 | Research Associate Imperial College London |
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GRANT APPLICATIONS UNDER EVALUATION

| Project Title | Funding source | Submission date | Role |
|---|---|--------------------------------|------------|
| “Matter in Extreme Conditions at Hellenic Mediterranean University” | Marie Skłodowska-Curie Individual FellowshipsH2020-MSCA-IF-2020 | 07.09.2020 awaiting results | Supervisor |

SCIENTIFIC ACHIEVEMENTS

✓ *Scientific achievements with very high international impact during the previous years with great effect to the scientific achievements of the last 10 years:*

The Principal Investigator (Prof. Michael Tatarakis) has an excellent track record in the field of ultrafast, strong laser matter and plasma interactions, and he is of the **early pioneer experimentalists** in the field [1]. His research achievements to date include very significant highlights and breakthroughs in Physics with a worldwide high scientific impact. These achievements have received distinctive attention by other researchers worldwide (more than **6200** citations¹) as well as by magazines reporting scientific breakthroughs for the broader audience such as Physics Today, Physics World etc. One of the **very recent (November 2017)** breakthroughs, published in **Nature Communications** [2], concerned the invention of a **new mechanism** (Electro-Thermo-Mechanical instability – ETM) that seeds the generation of plasma instabilities, and is currently pursued further [3]. This mechanism has great impact not only **in plasma physics and particle acceleration research**, but also in other areas of Physics (e.g. high energy density physics, nuclear physics in hydrodynamics, fusion science). He has demonstrated **the highest generated magnetic field in a laboratory on earth** [4], which has opened new perspectives in science. Such huge magnetic fields have **effects in particle acceleration** [5-6]. He **investigated for the first time** the propagation of high current laser produced electron beams, and it was found that they are subject to severe filamentation and hosing instabilities [7]. He **observed for the first time** axial magnetic fields of the order of 10 MG generated by a circularly polarised laser in an underdense plasmas [8], of fundamental importance for laser plasma accelerators, which stimulated new analytical modelling. He has **demonstrated for first time** that an energetic electron beam produced and accelerated during the high intensity laser solid target interaction is collimated by the self-generated magnetic field and can propagate several hundreds of microns in the solid target [9]. This research **was the first to prove** that the “fast ignition” concept can rely on the collimated propagation of relativistic electrons in a solid and has received special attention worldwide. He has **pioneered** in laser generated secondary sources (harmonics) research and in particular in the study of high order harmonic generation from solids and gaseous targets, and a number of results significant to the scientific community worldwide have been obtained [10]. The physics of the generation of these harmonics and their properties has been of **significant importance in the last decade** [11]. He has **made advances** in the field of dense matter diagnostics with the development of **novel optical probing** (quantitative shadowgraphy) and laser plasma diagnostics [12-13]. Quantitative shadowgraphy is now routinely being used as a standard diagnostic in most laser matter/plasma interactions laboratories worldwide. Using laser probing diagnostics, he made **the first experimental observation** of the generated MHD instabilities and the magnetic fields in dense plasmas [14], opening a whole new scientific view in dense wire plasmas and the growth of MHD instabilities. Finally, he has also made **very significant contributions** to particle generation and acceleration using intense ultrashort laser pulses [15-17].

¹ Source: Scopus – excluding self-citations.

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- [1] F.N. Beg et al, *Physics of Plasmas* **4**, 447 (1997). 473 citations.
- [2] E. Kaselouris et al, *Nature Communications* **8**, 1713 (2017). 7 citations already
- [3] E. Kaselouris et al, *Plasma Physics and Controlled Fusion* **60**, 014031 (2018).
- [4] M. Tatarakis et al, *Nature* **415**, 280 (2002). 134 citations.
- [5] A. Gopal et al, *Plasma Physics and Controlled Fusion* **55**, 035002 (2013). 10 citations.
- [6] C.A.J. Palmer et al, *Physical Review Letters* **108**, 225002 (2012). 49 citations.
- [7] M. Tatarakis et al, *Physical Review Letters* **90**, 175001 (2003). 104 citations.
- [8] Z. Najmudin et al, *Physical Review Letters* **87**, 215004 (2001). 79 citations.
- [9] M. Tatarakis et al, *Physical Review Letters* **81**, 999 (1998). 134 citations.
- [10] B. Dromey et al, *Nature Physics* **2**, 456 (2006). 274 citations.
- [11] A. Willner et al, *Physical Review Letters* **107**, 175002 (2011). 44 citations.
- [12] A. Gopal et al, *Optics Letters* **32**, 1238 (2007). 28 citations.
- [13] S. Minardi et al, *Optics Letters* **33**, 86 (2008). 69 citations.
- [14] M. Tatarakis et al, *Physics of Plasmas* **5**, 682 (1998). 15 citations.
- [15] M. Zepf et al, *Physical Review Letters* **90**, 064801 (2003). 155 citations.
- [16] E.L. Clark et al, *Physical Review Letters* **84**, 670 (2000). 557 citations.
- [17] K. Krushelnick et al, *Physical Review Letters* **83**, 737 (1999). 137 citations.

✓ *Major contributions to the early careers of excellent researchers – Impact in Greece:*

The high standing scientific profile of Prof. Michael Tatarakis brought his leadership for a series of research developments in Greece and Europe with immediate effect to the early careers developments in Greece and Europe.

- *Centre of Excellence via Transfer of Knowledge:* Prof. Michael Tatarakis is the key scientist for the establishment of a new cutting-edge research centre, the IPPL (www.ippl.hmu.gr). This is a unique ultrafast and high-power laser matter interaction research infrastructure in Greece, an achievement of great importance to the scientific community and the young scientists in Greece and abroad. The driving force for the establishment of the IPPL was a Marie Curie ToK grant for the formation of a Centre of Excellence (~1MEuro) with Coordinator Prof. Michael Tatarakis.
- *Research Infrastructure for HiPER (High Power Energy Research):* After evaluation by the National Council of Research & Technology (ESET), Greece participated in the ESFRI Research Infrastructure HiPER (Energy) and CPPL became the Coordinator Research infrastructure in Greece with scientific coordinator Prof. Michael Tatarakis.
- *ESFRI/HiPER:* Prof Michael Tatarakis was invited to act as the scientific coordinator of the “Basic Science Programme” of HiPER and be a member of HiPER’s project management committee (September 2008). Greece participated in HiPER.
- *HiPER Hellas Network:* After evaluation by ESET a Hellenic network was formed with 14 partners (12 Universities and 2 companies)
- *“HELLAS-CH - ELI - LASERLAB Europe Synergy, HiPER & IPERION-CH.gr”:* IPPL is one of the user access points of this National Research Infrastructure, offering to the scientific community of Greece a variety of ultrashort laser pulse capabilities (pulse duration, wavelength, repetition rate) up to 45TW. HELLAS-CH research infrastructure offers unique training capabilities to MSc, PhD and Post-Doctoral young researchers via the research access programme available to researchers from the Hellenic universities and research institutions and the access programme available to researchers from universities and research institutions from abroad.

In addition, Michael Tatarakis has been awarded with the 1st Erasmus prize by IKY for his contribution to early career development of excellent researchers via the Erasmus and Erasmus+ actions he has brought in Greece. Since 2006 until now he has received ~800k€ for Multilateral Competitive Erasmus Lifelong Learning programmes (HIPOLIN, APPEPLA, OLA, PowerLaPs) for the purpose of the training of young researchers. More than 150 young researchers have been benefitted from the Michael Tatarakis’s actions in Greece, via research itself (MSc, PhD, research grants), the research infrastructures development described above as well as the Centre of Excellence via the Marie Curie ToK grant (2005 – 2009).

Furthermore, for the most qualitative training of young scientists, he has developed the international MSc course “Plasma Physics & Applications (LaPLA)” funded and certified by the Erasmus Curriculum Development programme with Michael Tatarakis as proposer and scientific coordinator. He is also the director of the aforementioned MSc programme.

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✓ *Invited talks & presentations to peer-reviewed, internationally established conferences and international advanced schools:*

Michael Tatarakis has a large number of invited talks & presentations in peer reviewed conferences as well as in international advanced schools. Indicatively, he was an **invited speaker** at the 3rd International Symposium on High Power Laser Science and Engineering (2018, Suzhou, China), and an **invited speaker** at the 2nd Global Summit & Expo on Laser Optics & Photonics (2018, Rome, Italy). He was also a **nominated invited speaker** at the 44th EPS Conference on Plasma Physics (2017, Belfast, Northern Ireland), a **nominated invited lecturer** at the 27th Symposium on the Plasma Physics and Technology (2016, Prague, Czech Republic), an **invited lecturer** at the HiPOLIN Erasmus Intensive School (2014, Rethymno, Greece), an **invited speaker** at the International Conference on Plasma Science and Applications (2013, Singapore), an **invited lecturer** at the APPEPLA Erasmus Intensive School (2012, Rethymno, Greece), an **invited speaker** at the SPIE Optics & Optoelectronics International Symposium (2011), an **invited lecturer** at the International Workshop & Summer School “*Towards Fusion Energy*” (2011, Kudowa Zdrój, Poland), an **invited speaker** at the 1st European Erasmus Intensive Programme on “*Propagation of E.M. waves in magnetised plasmas*” (2010, Rethymno, Greece), an **invited lecturer** at the International School of Quantum Electronics (2009, Erice, Italy), an **invited speaker** at the 6th International Conference on Inertial Fusion Sciences and Applications (2009, San Francisco, USA), an **invited speaker** at the ULIS 2009 Conference (2009, Frascati, Italy) an **invited speaker** at the 10th International Workshop on the Fast Ignition of Fusion targets (Chania, Greece), an **invited speaker** at the 4th International Conference on High Energy Density Laboratory Astrophysics (Ann Arbor, USA), an **invited speaker** at the XXIV International Conference LASERS (2001, Tucson, USA), and an **invited speaker** at the 43rd American Physical Society Conference on Plasma Physics (2001, Long Beach, USA).

✓ *Organisation of international conferences (memberships in the steering and/or organising committee)*

Prof. Michael Tatarakis has organized and participated in the steering and/or organization committee in a number of international conferences. The more recent of these, include the 47th EPS 2020 conference (invited member of the Program Committee, conference postponed to 2021 due to COVID 19), the 2017 ECLIM – European Conference on Laser Interaction with Matter (**invited member** and **representative of Greece** in the International Steering Committee), the 2018 ECLIM (**invited organizer**, held in IPPL), the 2017 IFSA – International Conference on Inertial Fusion Sciences and Applications (**invited member** of the Technical Program Committee), the 2015 EPS Conference on Plasma Diagnostics (**invited member** of the Programme Committee), the 2012 EPS Plasma Physics Conference combined with the 2012 ICPP – International Conference on Plasma Physics (**invited member** of the Programme Committee).

✓ *Distinctions, prizes & awards*

Representative distinctions and prizes of Michael Tatarakis for his academic activities and research, include the addition of the (2017) Nature Communications, 8 (1), art. no. 1713 at the highlighted research collection of the journal, the “Best Practice” award (2016) to the “*National Research Infrastructure for HiPER*” project of which he was the Coordinator, the Honorary Invited Plenary Lecture at the prestigious international conference «27th Symposium on Plasma Physics and Technology» in June 2016 in Prague, his role as an **invited member** of the Project Management Committee and Coordinator of the “Basic Science” of the HiPER programme (2008-today) and Coordinator of the Hellenic Network for HiPER, the **First Erasmus Prize** on the dissemination of results (Anniversary Conference SSF / Erasmus IP, 2013), the **First National Prize in Natural Sciences** awarded by the **Ministry of Education** after evaluation by the **National Council for Research & Technology** (2012), among all Hellenic Higher Education Institutions, for the “*Research on laser fusion of Hydrogen aiming at producing clean energy*”), and the honor and distinction to be the **Main Invited Speaker at the HiPER’s opening ceremony** (2008, Science Museum London). He has received the “success story” flag award for the Marie Curie ToK research Fellowship for the development of a **Centre of Excellence** via the transfer of knowledge (EU 014423-DAIX). He has received a number of individual **EU grants** (**Marie Curie Return Individual Research Fellowship**, FU05-CT-2002-50501, 2002-2003, **Marie Curie Individual Research Fellowship**, ERB 5004-CT98-5010, 1999-2001), and **UK Engineering and Physical Sciences Research Council (EPSRC) grants** for which he was either the proposer or main researcher (“*Fast electron transport into thick solid targets in high intensity laser-solid interactions*”- ERB 5004-CT98-5010 , 1999-2001, “*Relativistic Particle generation from Ultra-Intense Laser Plasma*

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interactions”- GR/R23909/01, 2001-2003, “*Magnetic field generation and fast electron propagation in solids using relativistic laser irradiation*” GR/M52564, 2000-2003, “*Laser Plasma Wave generation and electron acceleration*”, GR/L79151/01, 1998-1999). Finally, he has received the award for the **Best Contributed Paper** in the 23rd Annual Plasma Physics Conference (1996), an **EU Scholarship** for his PhD studies at Imperial College, London (1993-1997), as well as **Merit Scholarships** during his MSc (1991-1993) and BSc (Hons) studies at the University of Crete (1988-1990).