

Prof. Stylianos (Stelios) Tzortzakis

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Prof. Stylianos (Stelios) Tzortzakis received his Ph.D. from the Ecole Polytechnique (France, 2001) in Nonlinear Optics. He is a Full Professor of Physics at Texas A&M University at Qatar and a visiting Professor at Georgetown University in Qatar. He has worked and collaborated with many research laboratories in Europe, Asia, and the USA. Before his present affiliation with TAMU, he has held a CNRS position at the Ecole Polytechnique in France (2003-2005). In 2006 he was the recipient of a European Union Marie Curie Excellence Grant, with which he founded and led since then (presently as collaborating faculty), the UNIS research group at IESL-FORTH in Greece, where he was also the deputy director of the Institute (2009-2015). Finally, he is also affiliated with the Materials Department of the University of Crete in Greece as Assoc. Prof. since 2011. Prof. Tzortzakis is a recognized expert in nonlinear laser propagation phenomena and has created the *filamentation.org* website, a unique information resource for the related scientific community. He has been the chair/co-chair and member of scientific committees for many international conferences. He has more than 150 publications in high impact peer-reviewed journals (like in Nature) with more than 7000 citations, more than 100 plenary and invited talks at international conferences, h-index=42, g-index=82 (Google Scholar). He teaches, regularly, classical mechanics, electricity and magnetism, quantum mechanics, thermodynamics, optics, and photonics courses, as well as “Physics for World Leaders” for schools of foreign affairs. He has supervised >40 undergraduate and graduate students (9 Ph.D.). He has a long successful track record in organizing and participating in national and international research funding projects, summing more than 10M€ in the last ten years. In 2013 he received the “**Rozhdestvensky Medal**” of the **Russian Optical Society** for key contributions in strong field Laser and THz science.

Scientific community

Active referee for the following journals: Nature Photonics, Nature Communications, Physical Review Letters, Physical Review A, Optics Letters, Optics Express, Applied Physics Letters, Applied Physics A&B, and others.

Member of the Scientific and Technical Assessor Committee (CACT) of the **Salamanca Pulsed Lasers Center** CLPU, the biggest laser center in Spain (2014-present)

Member of the Physical Sciences board of the Greek National Research and Technology Council; responsible for **advising the Greek Ministry of Education** on the national research policy (2014-2018)

Research Projects

Long experience (>20 years) from participation in European-Union funded projects (in Greece and France; for applications mainly in nonlinear optics, intense fs lasers, and THz physics). National projects from France, Greece (GSRT) and Qatar (QNRF) and bi-national projects, like the French-German “Teramobile” project for the monitoring of the

atmosphere using a unique powerful fs mobile laser system, and the Greek-French joint lab “MINOS” (Greek-Director, 2015-2023). Winner of many “Excellence grants” in Greece and the EU, including a Marie Curie Excellence Grant ~2M€.

Research Experience

- Nonlinear interactions of intense femtosecond laser pulses with matter.
- Nonlinear laser propagation phenomena - filamentation.
- Photonic structuring in the bulk of transparent solid materials.
- Quantum and complexity physics with photonic lattices.
- Intense tunable THz sources and THz nonlinear Optics.
- Tunable THz metamaterials.
- Environmental/atmospheric physics.

Scientific output and impact

- More than **150 articles** in high impact peer-reviewed journals
- More than **7000 citations; h-index = 42; g-index = 82; i-10 = 92**
- More than **200 International Conferences, > 100 plenary and invited talks**

Selected Publications

- **A. D. Koulouklidis, C. Gollner, V. Shumakova, V. Fedorov, A. Pugzlys, A. Baltuska, and S. Tzortzakis**, "Observation of extremely efficient terahertz generation from mid-infrared two-color laser filaments", *Nature Communication* **11**, 292 (2020) [[Highlighted in Phys.org](#)]
- **A. C. Tasolamprou, A. D. Koulouklidis, C. Daskalaki, C. P. Mavidis, G. Kenanakis, G. Deligeorgis, Z. Viskadourakis, P. Kuzhir, S. Tzortzakis, M. Kafesaki, E. N. Economou, and C. M. Soukoulis**, *Experimental Demonstration of Ultrafast THz Modulation in a Graphene-Based Thin Film Absorber through Negative Photoinduced Conductivity*", *ACS Photonics* **6**, 720-727 (2019) [[Journal Cover Page](#)]
- **A. D. Koulouklidis, D. G. Papazoglou, V. Y. Fedorov, and S. Tzortzakis** "Phase Memory Preserving Harmonics from Abruptly Autofocusing Beams" *Phys. Rev. Lett.* **119**, 223901 (2017) [[Editors' Suggestion](#)]
- **I. Dey, K. Jana, V. Y. Fedorov, A. D. Koulouklidis, A. Mondal, M. Shaikh, D. Sarkar, A. D. Lad, S. Tzortzakis, A. Couairon, and G. R. Kumar** "Highly efficient broadband terahertz generation from ultrashort laser filamentation in liquids" *Nature Communications* **8**, 1184 (2017) [[Highlighted in Phys.org](#)]
- **M. Chanal, V. Y. Fedorov, M. Chambonneau, R. Clady, S. Tzortzakis, and D. Grojo** "Crossing the threshold of ultrafast laser writing in bulk silicon" *Nature Communications* **8**, 773 (2017) [[Highlighted in Phys.org](#)]
- **V. Yu. Fedorov, M. Chanal, D. Grojo and S. Tzortzakis**, "Accessing Extreme Spatiotemporal Localization of High-Power Laser Radiation through Transformation Optics and Scalar Wave Equations" *Phys. Rev. Lett.* **117**, 043902 (2016)
- **K. Liu, A. D. Koulouklidis, D. G. Papazoglou, S. Tzortzakis, X.-C. Zhang**, "Enhanced terahertz wave emission from air-plasma tailored by abruptly autofocusing laser beams", *Optica* **3**, 605-608 (2016)
- **P. Panagiotopoulos, D. G. Papazoglou, A. Couairon, and S. Tzortzakis**, "Sharply autofocused ring-Airy beams transforming into nonlinear intense light bullets", *Nature Communications* **4**, 2622 (2013)
- **M. Bellec, P. Panagiotopoulos, D. G. Papazoglou, N.K. Efremidis, A. Couairon, S. Tzortzakis** "Observation and optical tailoring of photonic lattice filaments" *Phys. Rev. Lett.* **109**, 113905 (2012) [[Highlighted in Physics](#)]
- **N.-H. Shen, M. Massaouti, M. Gokkavas, J.-M. Manceau, E. Ozbay, M. Kafesaki, T. Koschny, S. Tzortzakis, C. M. Soukoulis**, "Optically implemented broadband blue-shift switch in the terahertz regime", *Phys. Rev. Lett.* **106**, 037403 (2011)