

Thomas CHRISTOPOULOS

Publications (October 2023)

A. Peer-reviewed journals

- [j15] G. Nousios, T. Christopoulos, O. Tsilipakos, and E. E. Kriezis, "Integrated Lasers with Transition-Metal-Dichalcogenide Heterostructures: Analysis and Design Utilizing Coupled-Mode Theory for Two-Dimensional Materials," *Physical Review Applied* **19**(6), 064027, 2023
- [j14] T. Christopoulos, E. E. Kriezis, and O. Tsilipakos "Multimode non-Hermitian framework for third harmonic generation in nonlinear photonic systems comprising two-dimensional materials," *Physical Review B* **107**(3), 035413, 2023
- [j13] G. Nousios, T. Christopoulos, O. Tsilipakos, and E. E. Kriezis, "Dynamic Routing through Saturable Absorption in Graphene Photonic Resonators: Impact of Carrier Diffusion and Finite Relaxation Time," *Journal of Applied Physics* **131**(5), 053104, 2022
- [j12] G. Sinatkas, T. Christopoulos, O. Tsilipakos, and E. E. Kriezis, "Electro-optic modulation in integrated photonics," *Journal of Applied Physics* **130**(1), 010901, 2021 [**Invited Perspective Article**] [**Editor's Pick**]
- [j11] T. Christopoulos, O. Tsilipakos, and E. E. Kriezis, "Perturbation theory for Kerr nonlinear leaky cavities," *Optics Letters* **45**(23), 6442-6445, 2020
- [j10] T. Christopoulos, O. Tsilipakos, and E. E. Kriezis, "Degenerate four-wave mixing in THz with standing-wave graphene resonators," *Journal of the Optical Society of America B* **37**(9), 2626-2636, 2020
- [j9] T. Christopoulos, V. G. Alatoglou, and E. E. Kriezis, "All-optical nanophotonic resonant element for switching and routing applications exploiting graphene saturable absorption," *Journal of Applied Physics* **127**(22), 223102, 2020
- [j8] G. Sinatkas, T. Christopoulos, O. Tsilipakos, and E. E. Kriezis, "Comparative Study of Silicon Photonic Modulators based on Transparent Conducting Oxide and Graphene," *Physical Review Applied* **12**(6), 064023, 2019
- [j7] T. Christopoulos, O. Tsilipakos, G. Sinatkas, and E. E. Kriezis, "On the calculation of the quality factor in contemporary photonic resonant structures," *Optics Express* **27**(10), 14505-14522, 2019
- [j6] T. Christopoulos, O. Tsilipakos, G. Sinatkas, and E. E. Kriezis, "Degenerate four-wave mixing in nonlinear resonators comprising two-dimensional materials: A coupled-mode theory approach," *Physical Review B* **98** (23), 235421, 2018
- [j5] V. G. Alatoglou, T. Christopoulos, and E. E. Kriezis, "Nonlinear coupled-mode-theory framework for graphene-induced saturable absorption in nanophotonic resonant structures," *Physical Review A* **97**(6), 063836, 2018
- [j4] T. Christopoulos, O. Tsilipakos, and E. E. Kriezis, "Low-power bistability in graphene-comprising 3D photonic resonant circuits," *Journal of Applied Physics* **122**(23), 233101, 2017
- [j3] T. Christopoulos, O. Tsilipakos, N. Grivas, and E. E. Kriezis, "Coupled-mode-theory framework for nonlinear resonators comprising graphene," *Physical Review E* **94**(6), 062219, 2016
- [j2] T. Christopoulos, G. Sinatkas, O. Tsilipakos, and E. E. Kriezis, "Bistable action with hybrid plasmonic Bragg-grating resonators," *Optical & Quantum Electronics* **42**(2), 128, 2016
- [j1] O. Tsilipakos, T. Christopoulos, and E. E. Kriezis, "Long-Range Hybrid Plasmonic Disk Resonators for mW Bistability and Self-Pulsation," *IEEE/OSA Journal of Lightwave Technology* **34**(4), 1333-1343, 2016

B. Conference Proceedings

- [c23] G. Nousios, D. Chatsidimitriou, T. Christopoulos, O. Tsilipakos, and E. E. Kriezis, "Integrated passive Q-switched and mode-locked lasers utilizing TMD gain and graphene saturable absorption," *10th International Conference on Micro-Nanoelectronics, Nanotechnology and MEMS 2023* (Athens, Greece), 2023
- [c22] T. Christopoulos, E. E. Kriezis, and O. Tsilipakos, "Analysis and Design of Reflective Nonlinear Metasurfaces Incorporating 2D Materials Utilizing a Multimode Quasi-Normal Mode Framework for Non-Hermitian Systems," *17th International Congress on Artificial Materials for Novel Wave Phenomena METAMATERIALS'2023* (Chania, Greece), 2023
- [c21] G. Nousios, T. Christopoulos, O. Tsilipakos, and E. E. Kriezis, "Integrated Q-switched lasing element in the NIR with transition metaldichalcogenide gain and graphene saturable absorption," *13th International Conference on Metamaterials, Photonic Crystals and Plasmonics META 2023* (Paris, France), 2023
- [c20] T. Christopoulos, E. E. Kriezis, and O. Tsilipakos, "A multimode quasi-normal mode framework for nonlinear harmonic generation with 2D materials," *13th International Conference on Metamaterials, Photonic Crystals and Plasmonics META 2023* (Paris, France), 2023 **[Invited Talk]**
- [c19] G. Nousios, T. Christopoulos, O. Tsilipakos, and E. E. Kriezis, "An Integrated Passively Q-switched Nanophotonic Laser in the NIR Based on Two-Dimensional Materials," *18th Conference on Lasers and Electro-Optics Europe & European Quantum Electronics Conference CLEO/EUROPE-EQEC 2023* (Munich, Germany), 2023
- [c18] T. Christopoulos, E. E. Kriezis, and O. Tsilipakos "A Quasi-Normal Mode Framework for Non-Hermitian Systems Comprising 2D Materials," *15th Annual Meeting Photonic Devices AMPD 2023* (Berlin, Germany), 2023
- [c17] G. Nousios, T. Christopoulos, D. C. Zografopoulos, and E. E. Kriezis, "A rigorous computational framework employing coupled-mode theory for assessing lasing with transition metal dichalcogenide bilayers in the nanoscale," *European Optical Society Annual Meeting EOSAM 2022* (Porto, Portugal), 2022
- [c16] T. Christopoulos, O. Tsilipakos, and E. E. Kriezis, "A Coupled-Mode Theory Approach for Consolidating Nonlinearities with Quasinormal Modes," *2021 OSA Frontiers in Optics + Laser Science APS/DLS FiO+LS 2021* (all-virtual conference), 2021
- [c15] G. Nousios, T. Christopoulos, D. Chatzidimitriou, A. Pitilakis, O. Tsilipakos, and E. E. Kriezis, "Nonlinear photonic resonators with graphene: saturable absorption and the effect of carrier diffusion and finite relaxation time," *Advanced Photonics Conference APC 2021* (hybrid virtual/in-person format), 2021
- [c14] T. Christopoulos, O. Tsilipakos, V. G. Ataloglou, and E. E. Kriezis, "Multi-channel Nonlinear Interactions in Practical Graphene Components," *5th International Conference on Metamaterials and Nanophotonics METANANO 2020* (all-virtual conference), 2020
- [c13] T. Christopoulos, O. Tsilipakos, V. G. Ataloglou, and E. E. Kriezis, "A Theoretical Study of Nonlinear Multi-Channel Graphene Components for the Near and Far-Infrared," *2020 OSA Frontiers in Optics + Laser Science APS/DLS FiO+LS 2020* (all-virtual conference), 2020
- [c12] O. Tsilipakos, T. Christopoulos, G. Sinatkas, and E. E. Kriezis, "Single- and Multi-Channel Nonlinear Phenomena in Resonant Structures Comprising Graphene," *13th International Congress on Artificial Materials for Novel Wave Phenomena METAMATERIALS'2019* (Rome, Italy), 2019
- [c11] T. Christopoulos, O. Tsilipakos, G. Sinatkas, and E. E. Kriezis, "Wave Mixing in Graphene Nonlinear Resonators Utilizing Coupled-Mode Theory," *16th Conference on Lasers and Electro-Optics Europe & European Quantum Electronics Conference CLEO/EUROPE-EQEC 2019* (Munich, Germany), 2019
- [c10] T. Christopoulos, O. Tsilipakos, G. Sinatkas, and E. E. Kriezis, "Single- and Multi-Channel Nonlinear Effects in Graphene-Enhanced Resonators," *41st Photonics & Electromagnetics Research Symposium PIERS 2019* (Rome, Italy), 2019

- [c9] T. Christopoulos, O. Tsilipakos, G. Sinatkas, and E. E. Kriezis, "Rigorous Quality Factor Calculation in Contemporary Optical Resonant System," *27th Optical Wave & Waveguide Theory and Numerical Modelling Workshop OWTNM 2019* (Malaga, Spain), 2019
- [c8] V. G. Ataloglou, T. Christopoulos, and E. E. Kriezis, "Graphene-enhanced nanophotonic resonators for nonlinear switching exploiting saturable absorption," *European Optical Society Biennial Meeting EOSAM 2018* (Delft, The Netherlands), 2018
- [c7] G. Sinatkas, T. Christopoulos, O. Tsilipakos, and E. E. Kriezis, "Silicon-photonic electro-optic modulators based on graphene and epsilon-near-zero materials," *Advanced Photonics Conference APC 2018* (Zurich, Switzerland), 2018
- [c6] T. Christopoulos, O. Tsilipakos, N. Grivas, G. Sinatkas, and E. E. Kriezis, "Modeling nonlinear resonators comprising graphene: A coupled mode theory approach," *37th Conference on Lasers and Electro-Optics CLEO 2017* (San Jose, CA, USA), 2017
- [c5] G. Sinatkas, I. Skandalos, T. Christopoulos, and E. E. Kriezis, "Electro-optic phase modulators based on transparent-conducting-oxide loaded silicon waveguides," *14th International Conference on Group IV Photonics GFP 2017* (Berlin, Germany), 2017
- [c4] T. Christopoulos, O. Tsilipakos, N. Grivas, and E. E. Kriezis, "Graphene-Based Nonlinear Resonators for Optical Bistability: A Coupled Mode Theory Approach," *32nd Panhellenic Conference on Solid State Physics and Material Science 2016* (Ioannina, Greece), 2106
- [c3] T. Christopoulos, O. Tsilipakos, and E. E. Kriezis, "Optical Bistability and Self-Pulsation with LongRange Hybrid Plasmonic Disk Resonators," *24th Optical Wave & Waveguide Theory and Numerical Modelling Workshop OWTNM 2016* (Warsaw, Poland), 2016
- [c2] D. Chatzidimitriou, G. Sinatkas, T. Christopoulos, A. Pitolakis, O. Tsilipakos, and E. E. Kriezis, "Carrier-Controlled NanophotonicComponents for Routing and Modulation Operations," *5th International Conference on Modern Circuits and Systems Technologies MOCAST 2016* (Thessaloniki, Greece), 2016
- [c1] O. Tsilipakos, T. Christopoulos, G. Sinatkas, and E. E. Kriezis, "Modelling Optical Bistability with Hybrid Silicon-Plasmonic Resonators," *23rd Optical Wave & Waveguide Theory and Numerical Modelling Workshop OWTNM 2015* (London, United Kingdom), 2015

C. Doctoral Dissertation

- T. Christopoulos, "Plasmonic and graphene nonlinear resonant nanophotonic devices: optical bistability and four-wave mixing," School of Electrical and Computer Engineering, Aristotle of Thessaloniki, November 2019. DOI: 10.26262/heal.auth.ir.321890