

Curriculum Vitae

- **Personal information**

Family name, First name: Sofikitis Dimitrios
Researcher unique identifier: Research ID: F-9620-2010
ORCID <https://orcid.org/0000-0002-3451-9260>

- **Education**

2009 PhD (Cold molecules)
Laboratoire Aime Cotton / Ondes et Matieres / Unversite Paris 11 / FRANCE
Supervised by: Pierre PILLET and Daniel Comparat
2006 Master: Optoelectronics - Microelectronics
Physics Department / University of Crete / GREECE

- **Research Highlights**

Polarimetry: *Nature* **514**, 76–79 (2014)
Atomic/molecular polarization: PRL **121** 083001 (2018), PRL **118** 253001 (2017)
Reaction Dynamics PRL **118** 233401 (2017)
Cold Molecules: *New Journal of Physics* **11** 055037 (2009)
Ellipsometry: *Optics Letters* **38** 8 1224 (2013)

- **Current position**

2019 Assistant Professor, Physics Department, University of Ioannina, Greece

- **Previous positions**

2013 – 2016 Postdoctoral Fellow in the framework of the TRICEPS & CHIRALSENSE ERC projects, Foundation for Research and Technology - Hellas (F.O.R.T.H) / GREECE
2016-2017 Physics Department of University of Crete, Greece
2011 – 2013 Postdoctoral Fellow in the framework of the SOFORT Marie Curie IAPP, Foundation for Research and Technology - Hellas (F.O.R.T.H) / GREECE
2010 – 2011 Postdoctoral Fellow
Department of Chemistry and Pharmaceutical Sciences/ Vrije Universiteit Amsteram, VU THE NETHERLANDS

- **Fellowships**

Spring 2017 National Scholarship Foundation (IKY) – 2nd position in Physical Sciences
Spring 2017 Fellowship “G. Ioannou & S. Katsaraki”
2011 – 2013 Marie Curie Fellow in the Framework of the SOFORT IAPP project
2006 – 2009 Bourse Docteur Ingénieur (BDI) / CNRS/ Laboratoire Aime Cotton / Unversite Paris 11 / FRANCE
2005 – 2006 Greek National Scholarship Foundation (IKY), Faculty of Science / Physics Department / University of Crete / GREECE

- **Conference talks & lectures**

- 11.09.2018 Conference talk: Spin 2018 International Conference Ferrara Italy.
- 06.09.2018 Invited lecture: Stereodynamics 2018 International Conference Arosa Switzerland.
- 18.09.2017 Conference talk: IMA 2017 International Conference, Heraklion Greece.
- 12.09.2016 Conference talk: FLAIR 2016 International Conference, Aix-lesBains France.
- 25.01.2010 Invited lecture: Ciclo de seminarios del departamento de Quimica-Fisica i Universidad Complutense de MADRID (2010).
- 10.2006 Conference talk: 1st International Conference, ATLAS: Physical Chemistry Heraklion, Crete, Greece (2006).

- **Teaching activities**

- 2019 – present Quantum Mechanics (post-graduate course), Quantum Optics (post-graduate course), Molecular Physics, General Physics, Advanced Physics Laboratory: Physics Department University of Ioannina
- Autumn 2016 & 2017 Laser Spectroscopy (PH 466) / University of Crete / Greece
- Spring 2017 & 2018 Atomic Molecular Optical physics (PH 467) / University of Crete

- **Organization of scientific meetings**

- 2008 European Graduate College (EGC), Gif-sur-Yvette, France

- **Career breaks**

- 03/05/2011 – 03/11/2011 Six month compulsory military service

- **Linguistic – informatics skill**

English: (Fluent, Cambridge First Certificate in English)

French: (Fluent, DELF B2)

Informatics: LaTeX, Mathematica, Origin, LabVIEW, C

- **Participation in conference proceedings**

R. Engels, H.M. Awwad, K. Grigoryev, L. Huxold, M. Büscher, I. Engin, A. Hützen, G. Ciullo, V.D. Fotyev, K.A. Ivshin, E.N. Komarov, L.M. Kotchenda, P.V. Kravchenko, P.A. Kravtsov, S.G. Sherman, A.N. Soloviev, I.N. Soloviev, V.A. Trofimov, A.A. Vasilyev, M.E. Vznuzdaev, D. Toporkov, I.A. Rachek, Yu.V. Shestakov, T.P. Rakitzis, D. Sofikitis, C.S. Kannis, G.K. Boulogiannis “Advantages of Nuclear Fusion with Polarized Fuel” PoS (PSTP2017) 031 (2018)

D. Comparat, D. Sofikitis, A. Fioretti, , X. Li, R. Horchani, P. Pillet, M. Pichler, M. Allegrini, S. Weber and B. Chatel, “Molecular cooling by optical pumping with shaped femtosecond pulses” American Physical Society DAMOP annual meeting, University of Virginia, Charlottesville VA, Bull. Am. Phys. Soc. X2 (2009)

D. Sofikitis, M. Pichler, A. Fioretti ,S. Weber, R. Horchani, X. Li, M. Allegrini, B. Chatel, D. Comparat and P. Pillet "Broadband vibrational cooling of Cs₂ molecules" Faraday Discussion 142: Cold and Ultracold Molecules, Durham University, UK, 15-17 April 2009

D. Sofikitis, A. Fioretti, S. Weber, M. Viteau, A. Chotia, R. Horchani, M. Allegrini, B. Chatel, D. Comparat and P. Pillet: “Broadband vibrational cooling of cold molecules: theory and experiments”. SFW 4. 2009

Pierre Pillet, Matthieu Viteau, Amodsen Chotia, Dimitris Sofikitis, Maria Allegrinia, Nadia Bouloufa, Olivier Dulieu, and Daniel Comparat: ‘FORMATION OF COLD MOLECULES OR/AND LASER COOLING OF MOLECULES’: ICAP 2008

D. Sofikitis, L. Rubio-Lago, A. Koubenakis, T. P. Rakitzis “Pulsed-laser production and detection of spin-polarized hydrogen: Beyond Stern-Gerlach and NMR” ABSTRACTS OF PAPERS OF THE AMERICAN CHEMICAL SOCIETY 232 44-PHYS (2006)

- **Book Chapters**

“Chiral Analysis”, Prasad L. Polavarapu (Ed.), Elsevier, Amsterdam, 2017. (4) Chapter 16, “Cavity-based Chiral Polarimetry”, D. Sofikitis, G.E. Katsoprinakis, A.K. Spiliotis, and T.P. Rakitzis.

- **Publications**

- 1) Panagiotis Kalaitzis, Dimitris Sofikitis and Constantine Kosmidis “The role of predissociation states in the UV photooxidation of acetylene” Journal of Photochemistry and Photobiology A: Chemistry **436** 114373 (2023)
- 2) Athanasios Athanasopoulos and Dimitris Sofikitis “Kinetic energy distribution of the rescattering electrons from asymmetric $\omega/2\omega$ pulses” EPJD **76** 138 (2022)
- 3) Dimitris Sofikitis “Wavelength dependence of the angular distribution of the Coulomb explosion in the femtosecond ionisation of methyl iodide” Mol. Phys. **120** 1–2 e1995063 (2022)
- 4) Alexandros K. Spiliotis, Michalis Xygkis, Konstantinos Tazes, George E. Katsoprinakis, Dimitrios Sofikitis, Georgios Vasilakis and T. Peter Rakitzis “A nanosecond-resolved atomic hydrogen magnetometer” Phys. Chem. Chem. Phys. **23** 21521 (2021)
- 5) Alexandros K. Spiliotis, Michalis Xygkis, Michail E. Koutrakis, Dimitrios Sofikitis and T. Peter Rakitzis “Depolarization of spin-polarized hydrogen via collisions with chlorine atoms at ultrahigh density” Chemical Physics Impact **2** 100022 (2021)
- 6) Alexandros K. Spiliotis, Michalis Xygkis, Michail E. Koutrakis, Konstantinos Tazes, Gregoris K. Boulogiannis, Chrysovalantis S. Kannis, Georgios E. Katsoprinakis, Dimitrios Sofikitis and T. Peter Rakitzis “Ultrahigh-density spin-polarized hydrogen isotopes from the photodissociation of hydrogen halides: new applications for laser-ion acceleration, magnetometry, and polarized nuclear fusion” Light: Science & Applications **10**:35 (2021)
- 7) E. Kechaoglou, P. Kalaitzis and D. Sofikitis “Observation of a Freeman resonance in the femtosecond ionization of Methyl Iodide” Chem. Phys. Lett. **759** 137984 (2020)
- 8) A. K. Spiliotis, M. Xygkis, E. Klironomou, E. Kardamaki, G. K. Boulogiannis, G. E. Katsoprinakis, D. Sofikitis and T. P. Rakitzis “Gas-phase optical activity measurements using a compact cavity ringdown polarimeter” Laser Phys. **30** 075602 (2020)
- 9) A.K. Spiliotis, M. Xygkis, E. Klironomou, E. Kardamaki, G.K. Boulogiannis, G.E. Katsoprinakis, D. Sofikitis, T.P. Rakitzis “Optical activity of lysozyme in solution at 532 nm via signal-reversing cavity ring-down polarimetry” Chem. Phys. Lett. **747** 137345 (2020)
- 10) Markus Buscher, Anna Hutzen, Ilhan Engin, Johannes Thomas, Alexander Pukhov, Jurgen Boker, Ralf Gebelz, Andreas Lehrach, Ralf Engels, T. Peter Rakitzis and Dimitris Sofikitis “Polarized

- proton beams from a laser-plasma accelerator” *Int. J. Mod. Phys. A* **34**, 36 1942028 (2019)
- 11) G. K. Boulogiannis, C. S. Kannis, G. E. Katsoprinakis, D. Sofikitis and T. Peter Rakitzis “Spin-Polarized Hydrogen Depolarization Rates at High Hydrogen Halide Pressures: Hyperfine Depolarization via the HY–H Complex” *J. Phys. Chem. A*, **123**, 38, 8130 (2019)
 - 12) Dimitris Sofikitis, Chrysovalantis S. Kannis, Gregoris K. Boulogiannis, Georgios E. Katsoprinakis and T. Peter Rakitzis “Photofragment spin-polarization measurements via magnetization quantum beats: dynamics of DI photodissociation”, *Phys. Chem. Chem. Phys.* **21**, 14000 (2019)
 - 13) Anna Hützen, Johannes Thomas, Jürgen Böker, Ralf Engels, Ralf Gebel, Andreas Lehrach, Alexander Pukhov, T. Peter Rakitzis, Dimitrios Sofikitis and Markus Büscher “Polarized Proton Beams from Laser-induced Plasmas” *High Power Laser Sci. Eng.* **7** e16 (2019)
 - 14) C. S. Kannis, G. E. Katsoprinakis, D. Sofikitis and T. P. Rakitzis “Nuclear-spin polarization dynamics of H₂, D₂, and HD molecules in magnetic fields” *Phys. Rev. A*. **98**, 043426, (2018)
 - 15) D. Sofikitis, J. Suarez, J. A. Schmidt, T. P. Rakitzis, S. C. Farantos and M. H. M. Janssen “Exit-channel recoil resonances by imaging the photodissociation of single quantum-state-selected OCS molecules” *Phys. Rev. A* **98** 033417 (2018)
 - 16) D. Sofikitis, C. S. Kannis, G. K. Boulogiannis and T. P. Rakitzis “Ultrahigh-density spin-polarized H and D observed via magnetization quantum beats” *Phys. Rev. Lett.* **121** 083001 (2018)
 - 17) D. Sofikitis Jaime Suarez, Johan A. Schmidt, T. Peter Rakitzis, Stavros C. Farantos, and Maurice H. M. Janssen “Recoil inversion in the photodissociation of carbonyl sulfide near 234 nm.” *Phys. Rev. Lett.* **118** 253001 (2017)
 - 18) D. Sofikitis, Pavle Glodic, Greta Koumarianou, Hongyan Jiang, Lykourgos Bougas, Peter C. Samartzis, Alexander Andreev, and T. Peter Rakitzis “Highly spin-polarised deuterium atoms from the UV dissociation of Deuterium Iodide” *Phys. Rev. Lett.* **118** 233401 (2017)
 - 19) D. Sofikitis and T. P. Rakitzis *Phys. Rev. A* **92** 032507 (2015)
 - 20) D. Sofikitis, A. K. Spiliotis, K. Stamataki, G. E. Katsoprinakis, L. Bougas, P. C. Samartzis, B. Loppinet, T. P. Rakitzis, M. Surligas and S. Papadakis “Microsecond-resolved SDR-based cavity ringdown” *Applied Optics* **54** 18 5861 (2015)
 - 21) L. Bougas, D. Sofikitis, G. E. Katsoprinakis, A. K. Spiliotis, P. Tzallas, B. Loppinet and T. P. Rakitzis “Chiral Cavity Ring Down Polarimetry: Chirality and magnetometry measurements using signal reversals” *J. Chem. Phys.* **143** 104202 (2015)
 - 22) D. Sofikitis, L. Bougas, G. E. Katsoprinakis, A. K. Spiliotis, B. Loppinet and T. P. Rakitzis “Evanescent-wave and ambient chiral sensing by signal-reversing cavity ringdown polarimetry” *NATURE* **514**, 76–79 (2014)
 - 23) L. Bougas, G. E. Katsoprinakis, D. Sofikitis, T. P. Rakitzis P. C. Samartzis and T. N. Kitsopoulos, J. Sapirstein, D. Budker, V. A. Dzuba, V. V. Flambaum, and M. G. Kozlov “Stark shift and parity nonconservation for near-degenerate states of xenon” *Phys. Rev. A* **89** 042513 (2014)
 - 24) D. Sofikitis, K. Stamataki, M..A.Everest, V. Papadakis, J-L Stehle, B. Loppinet and T. P. Rakitzis “Sensitivity enhancement for evanescent-wave sensing using cavity-ring-down ellipsometry” *Optics Letters* **38** 8 1224 (2013)
 - 25) D. Sofikitis, G. Stern, L. Kime, E. Dimova, A. Fioretti, D. Comparat and P. Pillet “Loading a dipole trap from an atomic reservoir” *Eur. Phys. J. D* **61** 437-442 (2011)

- 26) L. Bougas, D. Sofikitis, M.I A. Everest, A. J. Alexander, T. P. Rakitzis, “(2+1) laser-induced fluorescence of spin-polarized hydrogen atoms”, *J. Chem. Phys.* **133** 174308 (2010)
- 27) D. Sofikitis, A. Fioretti, S. Weber, R. Horchani, M. Pichler, X. Li, M. Allegrini, B. Chatel, D. Comparat and P. Pillet “Vibrational cooling of cold molecules with optimized shaped pulses” *Mol. Phys.* **108** 6 795– 810 (2010)
- 28) D. Sofikitis, R. Horchani, X. Li, M. Pichler, A. Fioretti, D. Comparat and P. Pillet “Demonstration of simple, non-coherent, selective population transfer in cesium dimers” *Phys. Rev. A* **80** 051401(R) (2009)
- 29) A. Fioretti, D. Sofikitis, X. Horchani, R. and Li, M. Pichler, S. Weber, M. Allegrini, B. Chatel, D. Comparat, and P. Pillet “Cold cesium molecules: from formation to cooling” *Journal of Modern Optics* **56** 18 2089 (2009)
- 30) D. Sofikitis, A. Fioretti, S. Weber, M. Viteau, A. Chotia, R. Horchani, M. Allegrini, B. Chatel, D. Comparat and P. Pillet “Broadband vibrational cooling of cold cesium molecules: theory and experiments”. *Chinese Journal of Chemical Physics* **22** 2 149 (2009)
- 31) D. Sofikitis, S. Weber, A. Fioretti, R. Horchani, M. Allegrini, B. Chatel, D. Comparat and P. Pillet “Molecular vibrational cooling by Optical Pumping with shaped femtosecond pulses”. *New Journal of Physics* **11** 055037 (2009)
- 32) M. Viteau, A. Chotia, D. Sofikitis, M. Allegrini, N. Bouloufa, O. Dulieu, D. Comparat and P. Pillet: “Broadband lasers to detect and cool the vibration of cold molecules”. *Faraday Discussions* **142** 1-14 (2009)
- 33) N. C.M. Bartlett, D. J. Miller, R. N. Zare, A. J. Alexander, D. Sofikitis, T. P. Rakitzis “Time-dependent depolarization of aligned HD molecules” *Phys. Chem. Chem. Phys.* **11**, 142 (2009)
- 34) D. Sofikitis, L. Rubio-Lago, L. Bougas, A. J. Alexander and T. P. Rakitzis, “Laser-detection of spin-polarized hydrogen from HCl and HBr photodissociation: Comparison of H- and halogen-atom polarizations” *J. Chem. Phys.* **129**, 144302 (2008)
- 35) N. C. M. Bartlett, D. J. Miller, D. Sofikitis, T. P. Rakitzis, A. J. Alexander and R. N. Zare : “Preparation of Oriented and Aligned H₂ and HD by Stimulated Raman Pumping” *J. Chem. Phys.* **129**, 084312 (2007)
- 36) D. Sofikitis, L. Rubio-Lago, A. J. Alexander and T. P. Rakitzis “Pulsed laser detection of Spin Polarized Hydrogen atoms” *Europhysics Letters* **81**, 68002 (2008)
- 37) D. Sofikitis, L. Rubio-Lago, M. R. Martin, D. J. A. Brown, N. C. M. Bartlett, A. J. Alexander, R. N. Zare and T. P. Rakitzis “Optical control of ground-state atomic orbital alignment: Cl(²P_{3/2}) atoms from HCl(v=2,J=1) photodissociation” *J. Chem. Phys.* **127**, 144307 (2007)
- 38) L. Rubio-Lago, D. Zaouris, Y. Sakellariou, D. Sofikitis, T. N. Kitsopoulos, F. Wang, X. Yang B. Cronin, A. L. Devine, G. A. King, M. G. D. Nix, M. N. R. Ashfold, S. S. Xantheas “Photofragment slice imaging studies of pyrrole and the Xe - pyrrole cluster” *J. Chem. Phys.* **127**, 064306 (2007)
- 39) D. Sofikitis, L. Rubio-Lago, M. R. Martin, D. J. A. Brown, R. N. Zare and T. P. Rakitzis “Preparation of highly polarized nuclei: Observation and control of time-dependent polarization transfer from H³⁵Cl molecular rotation to ³⁵Cl nuclear spin” *Phys.Rev. A* **76**, 012503 (2007)
- 40) L. Rubio-Lago, D. Sofikitis, A. Koubenakis and T. P. Rakitzis “Time-dependent polarization transfer from molecular rotation to nuclear spin” *Phys.Rev. A* **74**, 042503 (2006)
- 41) L. Rubio-Lago, D. Sofikitis, A. Koubenakis and T. P. Rakitzis “Laser preparation of spin-polarized atoms from molecular photodissociation” *Phys.Scr.* **73** C71-C75, (2006)