

# Curriculum Vitae

Iannis K. Kominis

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## BIOGRAPHICAL DATA

<i>Place - Date of Birth</i>	Athens, Greece – 24/10/1972
<i>High-school</i>	German School of Athens, Dörpfeldgymnasium
<i>Military Service</i>	Greek Air Force, 03/2001 – 03/2002
<i>Languages</i>	Greek (native), English (fluent), German (fluent)

## ACADEMIC APPOINTMENTS

03/2009 – present	Assistant Professor
11/2003 – 03/2009	Lecturer Department of Physics, University of Crete, Heraklion, Greece.
11/2003 – present	Affiliated Researcher Institute of Electronic Structure & Laser, Foundation for Research and Technology, Heraklion, Greece.
11/2002– 11/2003	Postdoctoral Research Fellow, Nuclear Science Division, Lawrence Berkeley National Laboratory, Berkeley, USA.
03/2002– 10/2002	Postdoctoral Researcher Department of Physics, Princeton University, Princeton, USA.
09/1996– 12/2000	Research Assistant, Department of Physics, Princeton University, Princeton, USA.

## ACADEMIC EDUCATION

09/1996 – 12/2000	PhD, Physics, Princeton University, USA <u>Thesis Title:</u> <i>Measurement of the Neutron (<math>^3\text{He}</math>) Spin Structure at Low <math>Q^2</math> and the Extended Gerasimov-Drell-Hearn Sum Rule</i> <u>Supervisor:</u> Prof. G. D. Cates
01/1999	US Particle Accelerator School, Vanderbilt University, Nashville, USA
06/1997 – 08/1997	L3 Collaboration, CERN, Geneva, Switzerland
01/1997	US Particle Accelerator School, University of California at Berkeley
09/1990 – 02/1996	BS, MS, Electrical Engineering, National Technical University of Athens, Greece (GPA=8.6/10).
09/1995 – 11/1995	Solid State NMR Group, University of Leipzig, Germany
07/1994	Advanced Physics School, University of Crete, Greece
07/1993	Advanced Physics School, N.C.S.R. “Demokritos”, Athens, Greece

## RESEARCH INTERESTS

- 1) *Production of spin-polarized noble gases ( $^3\text{He}$ ) through spin-exchange optical pumping*
- 2) *High energy polarized electron scattering off polarized  $^3\text{He}$  – study of nucleon spin structure*
- 3) *Laser cooling and trapping of radioactive atoms – tests of the electroweak interaction*
- 4) *Ultra-sensitive atomic magnetometers*
- 5) *Spin-noise and spin-squeezing in thermal and ultra-cold alkali-metal vapors*
- 6) *Quantum Biology, biochemical magnetometers, quantum measurement theory in biochemical reactions*

## TEACHING AND STUDENT SUPERVISION

- Undergraduate Courses taught at the Physics Department, University of Crete  
General Physics I (1<sup>st</sup> semester)  
General Physics II (2<sup>nd</sup> semester)  
Wave Physics (3<sup>rd</sup> semester)  
Optics Laboratory (3<sup>rd</sup> semester)  
Advanced Physics Laboratory (6<sup>th</sup> semester)  
Quantum Mechanics II (6<sup>th</sup> semester)  
Advanced Electromagnetism (7<sup>th</sup> semester)
- Organization of the 18<sup>th</sup> Advanced Physics Summer School on Quantum Optics and Quantum Information, July 2006, Heraklion, Greece. Lectured on Laser Cooling and Trapping.
- Currently supervising one PhD student (A. Dellis), already one student completed PhD (G. Katsoprinakis). Supervised several senior-thesis students of the Physics Department.

## RESEARCH GRANTS – PATENTS

- Greek Secretariat for Research and Technology Funding Program 2010, € 30k.
- John Latsis Public Foundation Award 2010, € 12k.
- Marie Curie International Reintegration Grant, € 80k, awarded in January 2004.
- U.S. Patent 7,038,450, with M. V. Romalis, T. W. Kornack, J. C. Allred and R. Lyman, “*High sensitivity atomic magnetometer and methods for using same*”.

## PROFESSIONAL SERVICE

- Referee for Physical Review Letters and Physical Review A, ERC, DFG, SNSF.
- Member of Organizing Committee, European Conference on Atoms Molecules & Photons IX (ECAMP 9), May 2007, Heraklion, Greece

# PUBLICATIONS

## BIOPHYSICS - QUANTUM BIOLOGY

- [24] Radical-ion-pair reactions are the biochemical equivalent of the optical double slit experiment  
I. K. Kominis, [Phys. Rev. E 83, 056118 \(2011\)](#).
- [23] Comment on "Spin-selective reactions of radical pairs act as quantum measurements"  
I. K. Kominis, [Chem. Phys. Lett. 508, 182 \(2011\)](#).
- [22] Coherent triplet excitation suppresses the heading error of the avian compass  
G. Katsoprinakis, A. T. Dellis and I. K. Kominis, [New J. Phys. 12, 085016 \(2010\)](#).
- [21] Quantum Zeno effect explains magnetic-sensitive radical-ion-pair reactions  
I. K. Kominis, [Phys. Rev. E 80, 056115 \(2009\)](#)

## ATOMIC PHYSICS - QUANTUM PHYSICS

- [20] Quantum Zeno effect in atomic spin-exchange collisions  
I. K. Kominis, [Phys. Lett. A 372, 4877 \(2008\)](#).
- [19] Quantum random number generator based on spin noise  
G. E. Katsoprinakis, M. Polis, A. Tavernarakis, A. T. Dellis and I. K. Kominis, [Phys. Rev. A 77, 054101 \(2008\)](#).
- [18] Sub-shot-noise Magnetometry with a Correlated Spin-Relaxation Dominated Alkali-Metal Vapor  
I. K. Kominis, [Phys. Rev. Lett. 100, 073002 \(2008\)](#).
- [17] Measurement of transverse spin-relaxation rates in a rubidium vapor by use of spin-noise spectroscopy  
G. E. Katsoprinakis, A. T. Dellis and I. K. Kominis, [Phys. Rev. A 75, 042502 \(2007\)](#).
- [16] High Frequency Atomic Magnetometer by Use of Electromagnetically Induced Transparency  
G. Katsoprinakis, D. Petrosyan and I. K. Kominis, [Phys. Rev. Lett. 97, 230801 \(2006\)](#).
- [15] Detecting shake-off electron-ion coincidences to measure beta-decay correlations in laser trapped Na-21  
N. D. Scielzo et al., [Nucl. Phys. A 746, 677c \(2004\)](#).
- [14] RETrap - a cryogenic Penning ion trap system  
S. Toleikis et al., [Nucl. Instrum. Meth. In Phys. Res. B 235, 479 \(2005\)](#).
- [13] Sub-femtotesla Multi-channel Atomic Magnetometer  
I. K. Kominis, T. W. Kornack, J. C. Allred and M. V. Romalis, [Nature 422, 596 \(2003\)](#).

## NUCLEAR PHYSICS

- [12]  $^3\text{He}$  Spin-Dependent Cross Sections and Sum Rules  
K. Slifer et al., [Phys. Rev. Lett. 101, 022303 \(2008\)](#).
- [11] Extraction of the neutron magnetic form factor from quasielastic  $^3\text{He} \rightarrow (e, e')$  at  $Q^2 = 0.1-0.6$  (GeV/c) $^2$   
B. Anderson et al., [Phys. Rev. C 75, 034003 \(2007\)](#).
- [10] Measurement of the Generalized Forward Spin Polarizabilities of the Neutron  
M. Amarian et al., [Phys. Rev. Lett. 93, 152301 \(2004\)](#).
- [9] Parity-violating electroweak asymmetry in p scattering  
K. A. Aniol et al., [Phys. Rev. C 69, 065501 \(2004\)](#).
- [8] Basic Instrumentation for Hall A at Jefferson Lab  
J. Alcorn et al., [Nucl. Instr. Meth. In Phys. Res. A, 522, 294 \(2004\)](#).
- [7]  $Q^2$  evolution of the Neutron Spin Structure Moments using a  $^3\text{He}$  target  
M. Amarian et al., [Phys. Rev. Lett. 92, 022301 \(2004\)](#).
- [6] Plane-wave impulse approximation extraction of the neutron magnetic form factor from quasielastic  $^3\text{He}(e, e')$  at  $Q^2 = 0.3$  to  $0.6$  (GeV/c) $^2$   
W. Xu et al., [Phys. Rev. C 67, 012201 \(2003\)](#).
- [5] The  $Q^2$  evolution of the generalized Gerasimov-Drell-Hearn integral for the neutron using a  $^3\text{He}$  target  
M. Amarian et al., [Phys. Rev. Lett. 89, 242301 \(2002\)](#).
- [4] Precision Measurement of the Spin-dependent Asymmetry in the Threshold Region of  $^3\text{He}(e, e')$   
F. Xiong et al., [Phys. Rev. Lett. 87, 242501 \(2001\)](#).
- [3] New Measurement for Parity Violation in Elastic Electron-Proton Scattering and Implications for Strange Form Factors  
K. A. Aniol et al., [Phys. Lett. B 509, 211 \(2001\)](#).

- [2] The Transverse Asymmetry  $A_T$  from Quasi-elastic  ${}^3\text{He}(e,e')$  Process and the Neutron Magnetic Form Factor  
W. Xu et al., [Phys. Rev. Lett. 85, 2900 \(2000\)](#).
- [1] Sol-gel coated glass cells for spin-exchange polarized  ${}^3\text{He}$   
M. F. Hsu, G. D. Cates, I. Kominis, I. A. Aksay and D. M. Dabbs, [Appl. Phys. Lett. 77, 2069 \(2000\)](#).

## CONFERENCE PRESENTATIONS

[26]	I. K. Kominis, Spin Chemistry Meeting, May 2011, Noordwijk, Netherlands. <a href="#">oral</a>
[25]	A. T. Dellis and I. K. Kominis, Spin Chemistry Meeting, May 2011, Noordwijk, Netherlands. <a href="#">poster</a>
[24]	I. K. Kominis, APS March Meeting, March 2011, Dallas USA. <a href="#">oral</a>
[23]	I. K. Kominis, Workshop on "Quantum Measurement and Spin Dynamics", March 2010, Lorentz Center, Leiden, Netherlands. <a href="#">oral</a>
[22]	I. K. Kominis, Physics Department Colloquium, University of Crete, October 2009, Heraklion, Greece. <a href="#">oral</a>
[21]	I. K. Kominis, Spin Chemistry Meeting, August 2009, St. Catharines, Canada. <a href="#">Oral</a>
[20]	A. T. Dellis and I. K. Kominis, Spin Chemistry Meeting, August 2009, St. Catharines, Canada. <a href="#">poster</a>
[19]	I. K. Kominis, International Conference on Quantum Foundation and Technology, July 2009, Shanghai, China. <a href="#">oral</a>
[18]	I. K. Kominis, Workshop on Quantum Effects in Biological Systems, July 2009, Lisbon, Portugal <a href="#">oral</a>
[17]	I. K. Kominis, Vienna Symposium on the Foundations of Modern Physics, June 2009, Vienna, Austria. <a href="#">poster</a>
[16]	I. K. Kominis, Max Planck Institute for Quantum Optics Colloquium, June 2009, Garching, Germany. <a href="#">oral</a>
[15]	I. K. Kominis, Chemistry Department Seminar, University of Fribourg, October 2008, Fribourg, Switzerland. <a href="#">oral</a>
[14]	I. K. Kominis, Physics Department Seminar, University of Fribourg, October 2008, Fribourg, Switzerland. <a href="#">oral</a>
[13]	I. K. Kominis, Physics Department Colloquium, University of Crete, April 2008, Heraklion, Greece. <a href="#">oral</a>
[12]	I. K. Kominis, Seminar at the Department of Photonics, Institute of Physics, Jagiellonian University, June 2007, Cracow, Poland. <a href="#">oral</a>

- [11] I. K. Kominis, Seminar at the Research Center for Astronomy and Applied Mathematics at the Academy of Athens, May 2007, Athens, Greece. [oral](#)
- [10] G. E. Katsoprinakis, A. T. Dellis, M. Polis and I. K. Kominis, ECAMP 9 Conference, May 2007, Heraklion, Greece. [poster](#)
- [9] I. K. Kominis, Cold Matter Group Seminar, April 2007, Imperial College, London, UK. [oral](#)
- [8] I. K. Kominis, Seminar at the Institut Laue-Langevin, November 2003, Grenoble, France. [oral](#)
- [7] I. K. Kominis, S. J. Freedman, N. D. Scielzo and P. A. Vetter, DAMOP Conference, May 2003, Boulder, USA. [poster](#)
- [6] I. K. Kominis, T. W. Kornack, J. C. Allred and M. V. Romalis, DAMOP Conference, May 2003, Boulder, USA. [oral](#)
- [5] I. K. Kominis, Physics Department Colloquium, University of Crete, October 2002, Heraklion, Greece. [oral](#)
- [4] T. Kornack, I. K. Kominis and M. Romalis, International Conference on Atomic Physics, July 2002, Boston, USA. [poster](#)
- [3] I. K. Kominis, GDH-Workshop, June 2000, Mainz, Germany. [oral](#)
- [2] A. Deur and I. K. Kominis, GDH-Workshop, June 2000, Mainz, Germany. [oral](#)
- [1] M. Romalis, I. K. Kominis, W. Happer and B. Saam, DAMOP Conference, May 1998, New Mexico, USA. [poster](#)