Ioannis (Yannis) PAPAPHILIPPOU

CONTACT INFORMATION	CERN	*tel.* : ++41 22 767 3179
	BE - ABP / HSI	*mob.*: ++41 75 411 2079
	Mailbox L07810	*fax*: ++41 22 766 9398
	CH-1211 Geneva 23	*e-mail*: yannis@cern.ch
	SWITZERLAND	*www*: http://cern.ch/yannis

NATIONALITY Greek

RESEARCH EXPERIENCE Theoretical and experimental linear and non-linear beam dynamics, optics design, studies on collective incoherent effects (beam-beam, intrabeam scattering, space-charge), luminosity modelling, operation coordination and performance optimization of high-intensity hadron and lepton synchrotron rings and colliders, accelerator design coordination, system specifications and costing, non-linear dynamics and chaos, dynamical astronomy.

EDUCATION

Université Paris 7 (Diderot), Physics Department

"Doctorat" (PhD), "Astrophysics and Space Technology", 10/1993 - 01/1997

- Thesis Topic: *Application of the Frequency Map Analysis Method in Galactic Dynamics*
- Adviser: Dr. Jacques Laskar, Astronomy and dynamical systems, Bureau des Longitudes, Observatory of Paris
- Area of Study: Non-linear dynamics in Astrophysics

"DEA" (MSc), "Astrophysics and Space Technology", 10/1992 - 07/1993

- Thesis Topic: *Application of the Frequency Map Analysis Method in a two degrees of freedom galactic potential*
- Adviser: Dr. Jacques Laskar
- Area of Study: Non-linear dynamics in Astrophysics

National and Kapodistrian University of Athens, Physics Department

"Ptychio" (Diploma) in Physics, 09/1988 - 09/1992

- Diploma thesis topic: *Dynamical analysis of non-linear wave equations with soliton solutions.*
- Adviser: Pr. Dimitris Frantzeskakis, Laboratory of Electronics, Section of Applied Physics
- 3-month traineeship on "Laser deviation with acoustical methods" at the Laboratory of Applied Physics, Ecole Centrale Paris

RESEARCH APPOINTMENTS

Accelerators and Beam Physics group, Beams department, CERN

Applied Physicist	10/2005 to present
Senior Physicist	since 2013
Principal Physicist	since 2019
Section Leader Hadron Synchrotron Incoherent effects	2016-2020
Group Leader Accelerators and Beam Physics	since 2021

- Hadron Colliders
  - Responsible for the LHC short straight section magnets' sorting and evaluation (including the Sector 34 incident) (2005-2008)
  - LHC IR optics and commissioning preparation (2006-2009)
  - Responsible for the modelling and optimisation of LHC and HL-LHC luminosity (2014-2017)
  - Responsible of the beam dynamics studies for long range beam beam compensation in the HL-LHC (since 2014)
  - Chairman of the working group on Beam-beam effects and luminosity (2015-2018)
  - Scientific secretary of the Parameter and Layout Committee, Technical Committee (2015) and Technical Coordination Committee (2016-2019) of HL-LHC
  - Deputy chairman of the LHC Beam Operation Committee (LBOC) (2018-2020)
- Hadron Synchrotrons
  - PS machine supervisor (2007-2011)
  - Responsible for the optics design of the PS2 ring (2006-2010)
  - SPS machine coordinator (2011-2014)
  - Proposal, setting up and operational deployment of new optics in the SPS (Q20) (2010-2012)
  - Deputy machine development coordinator for CERN injector complex (2011-2013)
  - Design coordinator of the High-Power Proton Synchrotron ring for LAGUNA-LBNO (2011-2014)
- Lepton rings
  - CLIC damping rings area coordinator (since 2007)
  - Co-chairman of CLIC-ILC collaboration working group on damping rings (2008-2013)
  - Coordinator of the EU TIARA WP6 on SLS Vertical Emittance Tuning (2011-2014)
  - Coordinator of the Low Emittance Rings collaboration and EUCARD2 network (2010-2017)
  - Task coordinator of the Ring's with Ultra-Low Emittance (RULE) of ARIES (2017-2021)
  - Task coordinator for building a longitudinally variable dipole magnet prototype (total budget 1MEuros) within the High Brightness Synchrotron Light Sources' WP of I-FAST (since 2021)
  - Member of the CLIC accelerator steering committee (since 2012)
  - Member of the FCC Coordination Group (since 2014)
  - Design coordinator of the FCCee injector systems (since 2014)
  - Member of the design study for eSPS, serving a Light Dark Matter eXperiment (LDMX) (since 2017)
- Teaching appointments
  - **Visiting Professor**, Aristotle University of Thessaloniki, Department of Physics (since 2017)
  - **Deputy director**, CERN Accelerator School (2019-2020)

Staff physicist 07/2002 - 09/2005

Theory and Application Software group, Machine Division, European Synchrotron Radiation Facility (ESRF)

- Experimental studies for the performance improvement of the ESRF storage ring

- Storage ring supervisor (Most Experienced Shift Leader)
- Design of an ultra-low emittance lattice for the storage ring upgrade
- Machine coordinator of the ESRF booster synchrotron and transfer lines

Research associate 01/2000 - 12/2000
Staff physicist 01/2001 - 03/2002

Spallation Neutron Source Accelerator Physics group, Collider-Accelerator Department, Brookhaven National Laboratory

- Responsible for the magnet correction system design of the SNS accumulator ring
- Accelerator Physics team leader for the SNS accumulator ring

Post-doctoral fellow 10/1997 - 12/1999

Accelerator Physics group, SPS-LEP Division, CERN

- Non-linear beam dynamics studies for the design of the Large Hadron Collider
- Turn-by-turn measurements at SPS and LEP and impedance measurements at SPS

EU Post-doctoral fellow 02/1997 - 08/1997

INFN -Legnaro, Padova

- Study of the halo formation mechanism in high intensity proton linacs

Military Obligations

03/2002 - 06/2002

- Basic training in 6th infantry battalion camp, Korinthos, Greece

Publications

- More then 370 publications in refereed journals, conference proceedings and internal notes
- 7509 citations, h-index 31, i10-index 104 (Nov 2021 from Google scholar profile)

Journal refereeing

- *Astronomy and Astrophysics*
- *IEEE Transactions on Nuclear Science*
- *International Journal of Bifurcation and Chaos*
- *Journal of Instrumentation*
- *Nuclear Instrumentation and Methods in Physics Research, Section A*
- *Physical Review Accelerators and Beams*
- *Physical Review Letters*

Teaching

- Lecturer for the graduate course on "*Accelerators'*, Physics' department, Aristotle University of Thessaloniki, Greece, April-June 2021.
- Lecturer for the graduate course on "*Accelerators and Detectors'*, Physics' department, Aristotle University of Thessaloniki, Greece, April-June 2020.
- Lecturer for the courses on "*A first taste of Non- Linear Beam Dynamics"* and "*Designing a synchrotron - a real life example*, Introductory CERN Accelerator School, Vysoke-Tatry, Slovakia, September 2019.
- Lecturer for the courses on "*Non-linear dynamics - Methods, Tools and Phenomenology"*, Advanced CERN Accelerator School, Slangerup, Danemark, June 2019.
- Lecturer for the graduate course on "*Electromagetism II"*, MSc, Physics' department, Aristotle University of Thessaloniki, Greece, April 2019.

- Lecturer for the courses on "*Non-linear dynamics phenomenology*", Specialised CERN Accelerator School on Numerical Methods, Thessaloniki, Greece, November 2018.
- Lecturer for the courses on "*A first taste of Non- Linear Beam Dynamics*" and "*Designing a synchrotron - a real life example*, Introductory CERN Accelerator School, Constanta, Romania, September 2018.
- Lecturer for the undergraduate courses on "*Accelerators and Detectors for Nuclear and Particle Physics*", Physics' department, Aristotle University of Thessaloniki, Greece, April 2018.
- Lecturer for the courses on "*Non-linear dynamics*", CERN Accelerator School, Royal Holloway University, UK, September 2017.
- Lecturer for the courses on "*Damping rings*" Tenth International Accelerator School for Linear Colliders, Teijin Academy, Fuji, Japan, December 2016.
- Lecturer for the courses on "*Non-linear beam dynamics*", Ph.D. School on Accelerator Physics, Sapienza Universitá di Roma, Italy, June 2016.
- Lecturer for the courses on "*Damping rings*" Ninth International Accelerator School for Linear Colliders, Whistler, Canada, December 2015.
- Lecturer for the courses on "*Non-linear dynamics*", CERN Accelerator School, Warsaw, Poland, October 2015.
- Lecturer for the courses on "*Damping rings*" and "*Ring colliders* ", Eighth International Accelerator School for Linear Colliders, Attalya, Turkey, December 2013.
- Advanced lecture Courses on "*Non-linear Dynamics*", at Cockcroft Institue, Warrington, UK, October 2013.
- Lecturer for the courses on *"Charged Particle Optics"* and *"Linear imperfections"* and "*Non-linear imperfections*", Joint Universities Accelerator School, Archamps, France, January 2007 - January 2017.
- Teaching assistant for the courses on *"Optics design and corrections"*, *"New Tools for Non- Linear Dynamics "*, and *"Low emittance rings"*, CERN Accelerator School, Chios, Greece, September 2011; Trodheim, Norway, August 2013.
- Lecturer for the course on *"Introduction to Accelerator Physics"*, Physics' department, University of Creta, Heraklion, Greece, December 2010.
- Lead instructor in a 1-week course (1.5 US graduate credits) on *"Fundamentals of storage ring design*", United States Particle Accelerator School, University of California - Santa Cruz , Santa Rosa, CA, January 2008.
- Lead instructor in a 2-weeks course (3 US undergraduate credits) on *"Accelerator fundamentals"*, United States Particle Accelerator School, Cornell University, Ithaka, NY, June 2005.
- Instructor in a 1-week course (1.5 US graduate credits) on *"Physics of the Spallation Neutron Source accumulator ring"*, United States Particle Accelerator School, University of Wisconsin, Madison, June 2004.
- Instructor in a 2-weeks course (3 US undergraduate credits) on *"Accelerator fundamentals"*, United States Particle Accelerator School, University of California, Los Angeles, CA, January 2002.
- Instructor in a 1-week course (1.5 US graduate credits) on *"Physics and Design of High-Intensity Circular Accelerators"*, United States Particle Accelerator School, University of Colorado, Boulder, CO, June 2001.

SUPERVISION OF STUDENTS, FELLOWS, ASSOCIATES

- Dr. Emilia Cruz Alaniz (Un. of Liverpool), March 2019 - February 2020

today, Project Associate, working on the HL-LHC crab-cavity tests in the SPS.

- Dr. Lee Carver (Un. of Liverpool), January 2018 - January 2019, Project Associate, working on the HL-LHC crab-cavity tests in the SPS.
- Michalis Zampetakis (University of Creta), November 2018 - today, CERN doctoral student, working on incoherent effect combined with cooling in hadron and lepton rings.
- Sophia Kostoglou (National Technical University of Athens), September 2016 - March 2020, CERN doctoral student, working on noise effects and their impact on the performance of LHC and HL-LHC.
- Dr. Nikos Karastathis (CERN), January 2017 - December 2019, CERN post-doctoral fellow, working on beam-beam effects and luminosity modelling for the LHC and HL-LHC.
- Dr. Dario Pellegrini (CERN), April 2016 - September 2018, CERN post-doctoral fellow, working on beam-beam effects for the LHC and HL-LHC.
- Dr. Hossein Ghasem (Institute for Research in Fundamental Sciences, Tehran, Iran), September 2015 - September 2017, CERN project associate, working on the non-linear dynamics of the CLIC damping rings.
- Loïc Gonzalez Carracedo (Université Claude Bernard Lyon I), June 2015 - August 2015, CERN Master's student, analysing LHC luminosity and beam-size data for estimating the convoluted emittance.
- Ozgur Etisken (University of Ankara), June 2015 - February 2021, CERN doctoral student, working on the design of the FCCee pre-booster ring.
- Kyriacos Skoufaris (University of Creta), March 2015 - August 2016, CERN technical student, studying symplectic integration schemes and implementing them in SIXTRACK. Doctoral student September 2016 - February 2021, CERN doctoral student, working on weak-strong simulations for beam-beam modelling and compensation in the LHC and HL-LHC.
- Dr. Andrei Patapenka (Joint Institute for Power and Nuclear Research - Sosny), June 2014 - January 2016, CERN project associate, implementation of the beam beam long range wire compensation in SIXTRACK.
- Giovanna Campogiani (University of Rome), April 2014 - June 2015, CERN technical student, studying evolution of beam distributions in the LHC at collision.
- Fotini Asvesta (National Technical University of Athens), February 2014 - April 2015, CERN technical student, studying PS optics with vertical dispersion for reducing the space-charge effect. February 2015 - today, CERN doctoral student, studying space-charge effects in the LHC injectors.
- Stephania Papadopoulou (University of Creta), October 2012 - November 2013, CERN technical student, studying lattice design for low emittance rings. December 2013 - July 2017, CERN doctoral student, studying halo formation in high-brightness lepton and hadron beams.
- Dr. Javier Alabau Gonzalvo (CERN), October 2012 - January 2016, CERN post-doctoral fellow, working on the design of a High-Power Proton Synchrotron for LAGUNA-LBNO and coupling correction systems for the CLIC damping rings.
- Dr. Androula Alekou (CERN), July 2012 - August 2014, CERN post-doctoral fellow, working on the design of a High-Power Proton Synchrotron for LAGUNA-LBNO and accumulator ring for a neutrino factory. February 2017 - August 2020, project Associate (Un. of Manchester), working on the HL-LHC crab-cavity tests in the SPS.
- Adrian Ulsroed (Norwegian University of Science & Technology), January

2012 - March 2013, CERN technical student, studying optics design and matching optimisation of the TT2-TT10 transfer line.

- Panagiotis Zisopoulos (National and Kapodistrian University of Athens), November 2010 - December 2011, CERN technical student, studying lattice design for the CLIC delay loops. February 2011 - October 2019, CERN doctoral student (Uppsala University), working on analysis of turn-by-turn BPM data for optics measurements and coupling correction in low emittance rings
- Dr. Yves Renier (CERN), October 2010 - September 2013, CERN post-doctoral fellow, working on non-linear dynamics of the CLIC damping rings and experiments at ATF.
- Kent Wooton (University of Melburne), October 2010 - May 2014, ACAS doctoral student, working on low emittance ring design and experiments at the Australian Synchrotron.
- Marianna Kydonieos (National Technical University of Athens), April 2010 - September 2010, trainee, studying lattice design for medical synchrotrons.
- Themistoklis Williams (Un. of Manchester), June 2010 - July 2010, trainee, studying Fourier analysis techniques of turn-by-turn data.
- Dr. Hannes Bartosik (Technical University of Vienna), April 2009 - March 2012, CERN doctoral student, studying lattice design and non-linear dynamics of the PS2 ring and machine studies related with the new low-gamma transition optics in the SPS. April 2012 - January 2015, CERN post-doctoral fellow, working on machine studies in the SPS related to the LHC injector upgrade.
- Dr. Fanouria Antoniou (National Technical University of Athens), January 2008 - December 2008, CERN technical student, designing the CLIC Pre-damping rings. January 2009 - June 2012, CERN doctoral student, working on lattice design for Intrabeam Scattering dominated ultra-low emittance rings. July 2012 - June 2015, CERN post-doctoral fellow, working on the design of CLIC damping rings and the design of High-Power Proton Synchrotron for LAGUNA-LBNO. July 2016 - September 2017, Visiting scientist (Un. of Valencia / Un. of Manchester), working on the HL-LHC crab-cavity tests in the SPS.
- Wolfgang Bartmann (Technical University of Vienna), September 2007 - September 2009, CERN doctoral student, lattice design and injection optics of the PS2 ring.
- Javier Barranco (Universidad Politecnica de Catalunya), September 2006 - August 2009, CERN doctoral student, designing the collimation system of the PS2 ring
- Maher Attal (SESAME), August - September 2005, ESRF visitor working on application of the frequency map analysis method to the SESAME lattice
- Aldo Calzetta (University of Rome), February 2005 - August 2005, ESRF trainee performing beam size and position measurements in the ESRF high energy transfer line (TL2) in order to refine the optics model
- Annalisa Patriarca (University of Rome), July 2004 - January 2005, ESRF trainee studying the bunch cleaning process in the ESRF Booster
- Stephanie-Louise Bailey (College of William & Mary), April - June 2003, ESRF trainee studying alternative methods for twiss function measurements using turn-by-turn data from the ESRF storage ring

PhD Thesis examiner

- Thomas Pugnat, (Université Paris-Saclay), *"3D non-linear beam dynamics*

for the LHC upgrades", June 2021 (rapporteur).

- Tessa Charles, (Monash University), *"Studies in Bright Electron Beams for Free Electron Lasers"*, April 2017.
- Jonas Breunlin, (University of Lund), *"Emittance related topics for fourth generation storage ring light sources"*, October 2016 (opponent).
- Vincenzo Forte (University of Clermond Ferand), *"Performance of the CERN PSB at 160 MeV with H- charge exchange injection"*, May 2016.
- Thapakron Pulampong (University of Oxford), *"Ultra-low Emittance Lattice Design for Advanced Synchrotron Light Sources"*, September 2015.
- Theodoros Argyropoulos (National Technical University of Athens), *"Controlled Longitudinal Emittance Blow-up in Double Harmonic RF Systems"*, January 2015.
- Ewen Maclean (University of Oxford), *"Modelling and correction of the non-linear transverse dynamics of the LHC from beam-based measurements"*, July 2014.
- Kosmas Panagiotidis (University of Liverpool), *"Low emittance tuning studies for future linear colliders"*, October 2010.
- Magnus Sjöström, (University of Lund), *"Accelerator physics studies of the MAX-lab storage rings"*, June 2009 (opponent).
- Guillaume Robert-Demolaize (Ecole Nationale Superieure de Physique de Grenoble), *"Design and Performance Optimization of the LHC Collimation System"*, November 2006.

Committees

- *Member* of the Accelerator and Target Advisory Committee of the Spallation Neutron Source (since 2021)
- *Member at large* American Physical Society DPB Education, Outreach and Diversity Committee
- *Organizing committee* for the Nano-beams workshop, CERN, February 2021
- *Co-convener* of the working group on "Operation and Commissioning", 61st ICFA Advanced Beam Dynamics Workshop on High-Intensity and High-Brightness Hadron Beams (HB2018), Daejeon, Korea, June 2018
- *Member* of the Machine Advisory Committee of the Iranian Light Source project (2015)
- *Member* of FCC coordination group (2015 - today)
- *Member* of EUCARD2 steering committee (2013 - 2017)
- *Member* of CLIC accelerator steering committee (2012 - today)
- *Member* of EU TIARA steering committee (2011 - 2014)
- *Member* of CERN-Greece working group (2010 - today)
- *Co-convener* of the working group on Injector systems, High Luminosity Circular e+e- Colliders - Higgs Factory workshop, Beijing - October 2014
- *Co-chairman* of the EUCARD2 workshop Universities meet Laboratories, Frankfurt - October 2014
- *Chairman* of the Organizing committee for Low Emittance Rings' workshop, CERN - January 2010, Heraklion - October 2011, Oxford - July 2013, Frascatti - September 2014, Grenoble - September 2015, Paris - October 2016, CERN - January 2018, INFN-LNF - October 2020.
- *Co-convener* of the working group on Injector systems, ECFA Linear Collider Workshop 2013, Hamburg - May 2013
- *Co-convener* of the working group on Damping rings, ATF and CESTA, International workshop on Linear Colliders, Geneva - October 2010, Arlington - October 2012

- *Co-convener* of the working group on Injectors, CLIC workshop, CERN - October 2008, October 2009, January 2013
- *Organizing committee* for the Intrabeam Scattering mini-workshop, Cockcroft, August 2008
- *Selection committee* for the PAC'2005 student paper award
- *Scientific committee* of the workshop on "Frequency Map Analysis" (Orsay - France 2004).
- *Organizing committee* for the CNRS workshop on "Evolution of Gravitational Systems - Models and Methods" (Aussois - France 1994).

Outreach

- Invited seminar on "Particle Accelerators, Machines of discovery and technological innovation" (in Greek), Open University of Municipality of Thessaloniki, Center of History, Thessaloniki, Greece, April 2018
- Seminars on "Introduction to Accelerators" (in Greek), Greek Teachers Visit Program, CERN, July 2008, August 2010, September 2013, October 2014, November 2015, September 2017
- Invited seminar on "Accelerators: Design and Operation" (in Greek), Commercial and Industrial Chamber of Evros, Alexandroupoli, Greece, September 2010
- Official CERN guide (since 2006) and lecturer (since 2007)

Languages

- English: Fluent - C2 (Cambridge Proficiency in English, 1986)
- French: Fluent - C2 (Certificat Pratique de Langue Française - 2ème degré, Université de Paris-Sorbonne, 1989)
- Spanish: Advanced - B2
- Italian: Good - A2
- German: Basic - A1
- Greek: Mother tongue

Professional societies

- CERN staff association (SA) delegate (since 2018), ambassador to the Greek delegation, representing the SA to the Beams' department management board (2018-2020)
- European Physical Society (EPS)
- American Physical Society (APS).
- Hellenic Physicists' Association (EEF)
- Hellenic Society for the study of High Energy Physics
- Representative of the Physics' department Student Union (1988-1992). General secretary of the union (1990-1992).