

# Professor Constantinos (Costas) Andreopoulos, *FHEA*

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## University of Liverpool

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## UK Research and Innovation (UKRI)

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December 20, 2018

## ACADEMIC APPOINTMENTS

- **12/2018 - present, Chair of Experimental Particle Physics**  
Department of Physics, University of Liverpool
- 06/2014 - 12/2018, Associate Professor (Reader)  
Department of Physics, University of Liverpool
- **02/2007 - present, Staff Scientist**  
02/2007 - 09/2008: Band D; 10/2008 - 04/2016: Band E; 05/2016 - present: Band F  
Particle Physics Department, Rutherford Appleton Laboratory, Science & Technology Facilities Council
- 06/2003 - 01/2007, Post-Doctoral Research Associate  
Particle Physics Department, Rutherford Appleton Laboratory, Science & Technology Facilities Council
- 09/1996 - 06/2003, Graduate Research Assistant  
Physics Department, University of Athens

## EDUCATION

- 03/1999 - 06/2003, **PhD** (Physics)  
National and Kapodistrian University of Athens  
Thesis: '*Experimental Study of the Phenomenon of Neutrino Oscillations with the MINOS Experiment*', UA/PHYS/HEP/02-06-2003; FERMILAB-THESIS-2003-39 (in Greek). Advisor: Prof. George Tzanakos
- 09/1996 - 11/1998, **MSc** (Nuclear and Particle Physics)  
National and Kapodistrian University of Athens  
Thesis: '*Calibration of a Prototype Electromagnetic Calorimeter for the COSMOS  $\nu_\mu \leftrightarrow \nu_\tau$  Neutrino Oscillation Experiment*', UA/PHYS/HEP/13-11-1998 (in Greek). Advisor: Prof. George Tzanakos
- 09/1992 - 09/1996, **BSc** (Physics)  
National and Kapodistrian University of Athens

**LEADERSHIP**

- 2018-present, SBN Systematics and Oscillation Sensitivities WG Co-Coordinator.
- 2017-present, SBND Physics and Analysis Tool Co-Coordinator.
- 2015-2017, DUNE Near Detector Evaluation WG Coordinator.
- 2014-present, DUNE-UK WP.1 (Physics Simulation and Experiment Design) Co-Coordinator.
- 2014-2015, Member of the T2K Analysis Steering Group.
- 2010-present, Coordinator of the VALOR Fitting Group.
- 2014-present, co-Spokesperson of the GENIE Collaboration.
- 2014-present, Member of the GENIE Executive Board.
- 2014-present, GENIE Tuning and Systematics WG Coordinator.
- 2006-2010, MINOS Physics Simulation WG Co-Coordinator.

**PROFESSIONAL SERVICE**

## Project

- 2013 - present, Budget holder for T2K-UK STFC project.

## Departmental

- 2018 - present, Equality and Diversity Deputy Director, Physics Dept., University of Liverpool
- 2014 - 2017, Member of the Departmental Research Excellence Framework (REF) Coordination Committee, Physics Dept., University of Liverpool

## PhD examinations

- 2016, 1st year PhD viva panel member, University of Liverpool
- 2015, PhD viva internal examiner, Thomas Stainer, University of Liverpool

## Reviewing and editorial roles

- Ad-hoc referee for Europhysics Letters, European Physical Journal Plus, Advances in High Energy Physics, Nuclear Instruments & Methods in Physics Research A, Particle Data Group.
- 2018, Proposal Reviewer, Research Foundation - Flanders, Belgium
- 2014 - present, Proposal Reviewer, National Science Center, Poland
- 2011 - present, Internal referee and member of the paper committee for various T2K analyses.
- 2012 - 2017, Member of Editorial Board, Scientific World Journal and Dataset Papers in Physics Journal, High Energy Physics section.

## Conference and school organization

- 2016, Member of the Scientific Organizing Committee, PHYSTAT- $\nu$  workshop, Fermilab, September 19-21.
- 2016, Chair, International Workshop on Global Fits to Neutrino Scattering Data and Generator Tuning (NuTune2016), Liverpool, July 11-15.
- 2015, Member of the Organizing Committee, NuSTEC Training in Neutrino Nucleus Scattering Physics, Okayama University, November 8-14.
- 2014, Member of the Organizing Committee, NuSTEC Training in Neutrino Nucleus Scattering Physics, Fermilab, October 16-27.
- 2014, Member of the Scientific Programme Committee, NuINT14 workshop, London, May 19-24 (co-Organized 'Neutrino Interaction Systematics for Oscillation Experiments' session).
- 2014, Co-Chair of the Organizing Committee, NuSTEC MC Generator School, Liverpool, May 14-16.

## Mentoring

- 2015 - present, Academic advisor, University of Liverpool

## Other

- 2018 - present, SBND Speakers Committee

**AWARDS AND PRIZES**

- 2016-17, 2015, 2009, Institute of Particle Physics Phenomenology (Durham Univ.) Associateship awards
- 2016, Breakthrough Prize (shared - Daya Bay, KamLAND, SNO, T2K, K2K and SuperK Collaborations)
- 2011, Le Prix La Recherche award (shared - T2K Collaboration)
- 1999 - 2002, Greek National Scholarship Foundation (IKY) award

**RESEARCH INCOME**

Research funding in the UK is centralized. My current research is funded predominantly by the Science and Technology Facilities Council (STFC) through a) research grants awarded to the T2K-UK and DUNE-UK projects, b) a *Consolidated Grant* awarded to the Liverpool Particle Physics group, and c) support for in-house particle physics research programme at STFC's national laboratories and, in particular, at the Particle Physics Department of the Rutherford Appleton Laboratory.

Recent awards:

- 2018, European Space Agency, Positrino: Positioning, Navigation and Timing using Neutrinos, Proposal in response to ESA AO/1-9535/18/NL/MP in collaboration with GMV Innovating Solutions Ltd. (Total award €200k, €82k at Liverpool), Liverpool PI
- 2017, DUNE-UK project: Pre-construction proposal (Total award £4.0M, £300k at Liverpool), WP1 Coordinator and Liverpool Co-Investigator
- 2017, Liverpool Centre for Doctoral Training on Data Intensive Sciences, PhD project supervisor [Physics Simulations to Underpin Discoveries in the Neutrino Sector]
- 2015, Liverpool Particle Physics Consolidated Grant (Total award £6.6M), Co-Investigator
- 2014, LBNE and the Fermilab LAr Detector Programme: (Total award £2.5M, £160k at Liverpool), WP1 Coordinator

**POST-DOC SUPERVISION**

- 2016 - present, Marco Roda (Liverpool)

Roda's positions of responsibility:

- 2018-present: SBN Neutrino MC Generators WG co-Coordinator

- 2016 - present, Steve Dennis (Liverpool)

Dennis's positions of responsibility:

- 2017-present: DUNE-UK WP1.1 - Near Detector Constraints and Oscillation Sensitivity Coordinator

**STUDENT SUPERVISION**

PhD

- 2018 - present, Supervising Mr. Thomas Frank Ham, University of Liverpool, PhD candidate.
- 2017 - present, Supervising Ms. Julia Tena Vidal, University of Liverpool, PhD candidate.
- 2017 - present, Supervising Mr. Jaggar Henzerling, University of Liverpool, PhD candidate.
- 2016 - present, Supervising Mr. Francis Bench, University of Liverpool, PhD candidate.
- 2016 - present, Co-supervising<sup>1</sup> Mrs. Rhiannon Jones, University of Liverpool, PhD candidate.
- 2014 - 2018, Supervised Dr. Christopher Barry, Univ. of Liverpool, PhD 2018.  
Thesis: '*Joint Analysis of Neutrino and Antineutrino Data from the T2K Experiment and Indications for Charge-Parity (CP) Violation.*'
- 2011 - 2015, Co-supervised<sup>2</sup> Dr. Steve Dennis, RAL & University of Warwick, PhD 2015.  
Thesis: '*Muon-Antineutrino Disappearance and Non-Standard Interactions at the T2K Experiment*', T2K-THESIS-069.  
Present position: Post-Doctoral Research Associate at the University of Liverpool.
- 2011 - 2014, Co-supervised<sup>3</sup> Dr. Lorena Escudero Sanchez, CSIC and University of Valencia, PhD 2014.

<sup>1</sup>With Prof. Christos Touramanis, University of Liverpool.

<sup>2</sup>With Dr. Gary Barker and Dr. Steve Boyd, University of Warwick.

<sup>3</sup>With Dr. Anselmo Cervera, IFIC.

Thesis: ‘*Joint Analysis of Three Flavour Neutrino Oscillations Combining the Electron-Neutrino Appearance and Muon-Neutrino Disappearance Channels in the T2K Experiment*’, T2K-THESIS-070.

Present position: Post-Doctoral Research Associate at the University of Cambridge.

- 2010 - 2014, Co-supervised<sup>4</sup> Dr. Thomas Dealtry, RAL & University of Oxford, PhD 2014.  
Thesis: ‘*Muon-Neutrino Disappearance with the T2K Beam*’, T2K-THESIS-057.  
Present position: Post-Doctoral Research Associate at Lancaster University.
- 2008 - 2011, Co-supervised<sup>5</sup> Dr. James Dobson, Imperial College London, PhD 2012.  
Thesis: ‘*Neutrino-Induced Charged-Current  $\pi^+$  Production at the T2K Near Detector*’, T2K-THESIS-019  
Present position: Post-Doctoral Research Associate at Imperial College London.

## MPHYS

- 2017 - 2018, Supervising Mr. Reece Shaw, University of Liverpool.  
Project: ‘*Deep Learning Techniques for Neutrino Event Reconstruction and Identification in SBND*’.
- 2017 - 2018, Supervising Mr. Josh Warren, University of Liverpool.  
Project: ‘*Deep Learning Techniques for Neutrino Event Reconstruction and Identification in SBND*’.
- 2016 - 2017, Supervised Mr. Jake Jackson, University of Liverpool.  
Project: ‘*Sensitivity of Sterile Neutrino Searches at the Fermilab Short Baseline Neutrino Programme*’.
- 2016 - 2017, Supervised Mr. Jack Ringwood, University of Liverpool.  
Project: ‘*Effects of Neutrino Interaction Uncertainties in Accelerator-Based Searches for Neutrino CPV*’.
- 2016 - 2017, Supervised Mr. Jonathan Stott, University of Liverpool.  
Project: ‘*Effects of Neutrino Interaction Uncertainties in Accelerator-Based Sterile Neutrino Searches*’.
- 2016 - 2017, Supervised Mr. James Taylor, University of Liverpool.  
Project: ‘*Statistical Issues in Precision Oscillation Measurements in Accelerator-Based Experiments*’.

## TEACHING

### Liverpool

- 2016-19, Project supervisor, PHYS 498 (MPHYS Project)
- 2014-19, Module organiser and lecturer, PHYS 201 (Electromagnetism)
- 2015-19, Tutor, PHYS 480 (Advanced Quantum Physics).
- 2017-19, Tutor, PHYS 370 (Advanced Electromagnetism).
- 2014-19, Moderator and/or monitor for several modules.

### External

- 2017, Lecturer (Simulation of Neutrino Interaction Physics), MCnet Summer School, Lund, Sweden.
- 2014, Tutor, UK High Energy Physics Summer School, University of Warwick.
- 2014, Lecturer, NuSTEC Neutrino Generator School, Liverpool.
- 2013, Tutor, UK High Energy Physics Summer School, University of Warwick.
- 2012, Tutor, UK High Energy Physics Summer School, Sommerville College, Oxford.
- 2009, Lecturer, 45th Karpacz Winter School in Theoretical Physics, Ladek-Zdroj, Poland.
- 2009, Lecturer, GENIE course, Fermilab.
- 2008, Lecturer, GENIE course, TRIUMF.
- 2007, Lecturer, GENIE course, Rutherford Appleton Lab.
- 1997 - 2002, Demonstrator, University of Athens, Physics Laboratory and Nuclear Physics Laboratory

<sup>4</sup>With Prof. Alfons Weber, RAL & University of Oxford.

<sup>5</sup>With Dr. Yoshi Uchida, Imperial College London.

**PROFESSIONAL AFFILIATIONS**

- 2018 - present, Fellow of the Higher Education Academy
- 2010 - present, Member of Institute Of Physics (IOP)
- 2000 - present, Member of Hellenic Society for the Study of High Energy Physics (EESFYE)

**RESEARCH COLLABORATION / GROUP MEMBERSHIPS**

- 2014-present, DUNE (<http://www.dunescience.org>)
- 2014-present, SBND (<http://sbn-nd.fnal.gov>)
- 2007-present, Hyper-Kamiokande (<http://www.hyperk.org>)
- 2010-present, VALOR [coordinator] (<https://valor.pp.rl.ac.uk>)
- 2007-present, T2K (<http://t2k-experiment.org>)
- 2002-present, GENIE [co-spokesperson] (<http://www.genie-mc.org>)
- 1999-2010, MINOS
- 1997-2003, DONUT
- 1997-1998, COSMOS experiment, Fermilab

**RESEARCH DIRECTIONS AND OBJECTIVES**

My research is focussed on accelerator-based neutrino physics and, in particular, on the experimental study of neutrino flavour oscillations. I aim to shed light on the existential question of the origin of the observed baryon asymmetry in the universe and to uncover the role of the neutrino. I perform high-precision measurements of neutrino mixing in order to establish the possible existence of leptonic charge-parity (CP) invariance violation and to identify its origin. I also aim to uncover possible new discrete symmetries of lepton flavour mixing and understand the connections between the quark and lepton sectors. Finally, I investigate the validity of the established 3-flavour paradigm both through direct experimental searches for new, sterile neutrinos and indirectly, via over-constrained measurement of 3-flavour mixing. I conduct my research on several experiments, maintaining a balanced portfolio that includes running (T2K), near-future (SBN/SBND) and far-future experiments (DUNE/LBNF). I also maintain a very active research profile in neutrino interaction phenomenology and I am a champion of interdisciplinary research that spans the boundaries between theory and experiment, as well as particle and nuclear physics. My research is data intensive, it relies on large-scale scientific computing infrastructure and applications, and employs advanced numerical and statistical methodologies - including from the flourishing field of deep learning. I am developing deep learning techniques for neutrino event reconstruction and I maintain a keen interest in potential applications beyond fundamental physics research.

Performing world-leading neutrino mixing measurements is my most salient scientific research output. I am the founder and coordinator of the international **VALOR** neutrino fitting group<sup>6</sup>. The group was established within the T2K experiment in 2010 and it plays a pivotal role in the overall oscillation analysis output of the T2K experiment. Both through personal analysis efforts and coordination of the VALOR fitting group, I led numerous flagship T2K oscillation analyses and contributed to nearly all published T2K oscillation papers (details may be found in later sections). VALOR analyses of T2K data have produced some of the most precise measurements of neutrino mixing parameters to date and have produced the tantalizing hints for CP invariance violation. One of my main research objectives is the continuation of the T2K physics exploitation and the improvement of the VALOR analysis techniques for the unprecedented exposure level and systematic error regime in which T2K now operates.

In the medium term (2020-2025), data from the short-baseline neutrino programme (SBN) at Fermilab will allow us to perform one of the most stringent tests of the hypothesis of light sterile neutrinos, and bring a generational advance in the study of neutrino interaction physics. I serve as a Physics and Analysis Tool co-Coordinator for SBND, the Near Detector of the SBN programme, and I lead preparations for physics analyses with the first neutrino data expected in 2020. My interest lies primarily in developing the vast neutrino interaction measurement programme possible at SBND. I am also actively involved in the overall SBN analysis effort: I lead the development of a systematic constraint and oscillation fit, based on VALOR, which combines several exclusive samples from all SBN experiments.

I also play a visible role in physics sensitivity and design optimisation studies for future experiments and,

<sup>6</sup><https://valor.pp.rl.ac.uk/>

currently, I serve as Physics coordinator for DUNE-UK. I delivered the first-ever oscillation sensitivity calculations, based on VALOR, from an end-to-end analysis using full event simulation and reconstruction. My group will play a leading role in delivering physics studies for the DUNE Physics TDR and CD-2 approval.

Another special interest of mine lies in the field of neutrino interaction phenomenology and computer simulations: I am the founder and co-Spokesperson of the international **GENIE** collaboration<sup>7</sup> which is responsible for the widely-used GENIE neutrino interaction physics simulation. GENIE provides an interface between theory and experiment and it plays a critical role in precision measurements of neutrino mixing. Embedding scarce experimental constraints and theoretical inputs in a consistent physics framework and improving the modelling of neutrino interaction physics, as well as understanding the modelling uncertainties and limitations, underlies all modern neutrino data analysis efforts. Today, GENIE's predictions serve as a 'standard candle' and GENIE plays an important role for the exploitation of the world neutrino program and the design of future facilities. Indeed, the primary GENIE publication has over 500 citations to date! In addition, though its successful Project Incubator, GENIE provides central coordination of community-wide development efforts. My vision for the future of GENIE is to expand the current activities to include the development of a leading global analysis of neutrino scattering data that will underpin our model development and systematic error analysis efforts. Currently, I serve as the GENIE Tuning and Systematics WG Coordinator and I closely oversee the development of that global analysis.

## RESEARCH HIGHLIGHTS

Main contributions to the SBND Experiment

- SBND Physics and Analysis Tool Development Co-Coordinator (2017-present)

Main contributions to the DUNE Experiment

- DUNE Near Detector Evaluation WG Coordinator (2015-2017).
- DUNE-UK WP.1 (Physics Simulation and Experiment Design) Coordinator (2014-present).
- Led the development of an advanced VALOR-based joint oscillation and systematics constraint fit: The first end-to-end oscillation analysis for DUNE (2015).

Main contributions to the T2K Experiment

- Chair of the review committee of the first T2K Near detector  $\nu_e$  disappearance (sterile) analysis (2013).
- Member of the  $\nu_\mu$  disappearance contour (statistics) committee (2011).
- Member of the paper committee for the first T2K Near detector  $\nu_e$  disappearance paper (2014).
- Member of the paper committee for the first T2K  $\nu_\mu$  disappearance paper (2011).
- Both through personal analysis efforts and coordination of the VALOR fitting group, I delivered many official T2K oscillation analysis results<sup>8</sup>:
  - Performed T2K  $\nu_\mu$ -disappearance analyses of the Run 1, Run 1-2, Run 1-3 and Run 1-4 [*Dealtry PhD*] datasets. The Run 1-2 result, published in PRD 85:031103 (2012), is the first ever published study of  $\nu_\mu$ -disappearance in an off-axis experiment. The subsequent results published in PRL 111:211803 (2013) and PRL 112:181801 (2014) are the world's most stringent constraint on the  $\nu_\mu$ -disappearance parameters.
  - Performed the first T2K full 3-flavour oscillation analysis by combining the  $\nu_\mu$ -disappearance and  $\nu_e$ -appearance analyses and performing a simultaneous measurement of  $\Delta m_{32}^2$ ,  $\theta_{23}$ ,  $\theta_{13}$  and  $\delta_{CP}$ . Full 3-flavour oscillation analyses were performed with the Run 1-3 and Run 1-4 datasets [*Escudero PhD*]. Our Run 1-4 results were published in PRD 91:072010 (2015).
  - Performed the first T2K  $\bar{\nu}_\mu$ -disappearance analysis with Run 5-6 data [*Dennis PhD*]. This result was published in PRL 116:181801 (2016).
  - Performed a full 3-flavour oscillation analysis combining all neutrino and antineutrino data [*Barry PhD*]. This work produced the most stringent limits on the CP violating phase  $\delta_{CP}$ , yielding hints for leptonic CP violation (Phys.Rev. D96 (2017) no.9, 092006 and arXiv:1807.07891 accepted by PRL).

<sup>7</sup><http://www.genie-mc.org>

<sup>8</sup>T2K collected data in several periods with different conditions and proton-on-target (POT) exposures, both in neutrino-enhanced Forward Horn Current (FHC) and antineutrino-enhanced Reversed Horn Current (RHC) modes: Run 1 (01-06/2010, FHC:  $0.323 \times 10^{20}$  POT), Run 2 (10/2010-03/2011, FHC:  $1.108 \times 10^{20}$  POT), Run 3 (03-06/2012, FHC:  $1.579 \times 10^{20}$  POT) and Run 4 (10/2012-05/2013, FHC:  $3.560 \times 10^{20}$  POT), Run 5 (05-06/2014, FHC:  $0.242 \times 10^{20}$  POT and RHC:  $0.506 \times 10^{20}$  POT), Run 6 (10/2014-06/2015, FHC:  $0.190 \times 10^{20}$  POT and RHC:  $3.505 \times 10^{20}$  POT), Run 7 (02-05/2016, FHC:  $0.480 \times 10^{20}$  POT and RHC:  $3.460 \times 10^{20}$  POT), Run 8 (10/2016 - 04/2017, FHC:  $7.170 \times 10^{20}$  POT) and Run 9 (10/2017 - 05/2018, FHC:  $0.204 \times 10^{20}$  POT and RHC:  $8.788 \times 10^{20}$  POT).

- Measured the rate of charged-current  $\pi^+$  production in the T2K off-axis near detector [*Dobson PhD*].
- Developed event generation applications integrating the GENIE simulation engine with the JPARC neutrino beam-line simulations and T2K detector geometry descriptions.
- Developed methods for propagating neutrino interaction physics uncertainties in T2K physics analyses.
- Designed, prototyped, developed and commissioned the light-injection DAQ control software for the T2K off-axis near detector electromagnetic calorimeters.

#### Main contributions to the MINOS Experiment

- Physics Simulations Working Group co-convener (2006 - 2010): Made major intellectual contributions on the physics model and uncertainty evaluations used for all published MINOS results.
- Assembly and commissioning of Fully-Automated Stations (at Athens and UTA) for the Hamamatsu M16 multi-anode photo-multipliers (PMTs) used at the MINOS Far detector. Was responsible for the operation of the Athens Station and the full characterization of the PMTs tested there. Between November 2001 and December 2002, I tested and characterized almost half of all Far detector PMTs.
- Commissioning and data-taking operations of the MINOS 4 Plane Prototype (4PP), the first full integration of all MINOS Far detector sub-systems at Fermilab (June - August 2000). Developed all offline software, analyzed the cosmic-ray and light-injection data, calibrated the prototype detector and characterized the prototype performance.
- Assembly and commissioning of the MINOS far detector in Soudan mine (September - December 2002).

#### Main contributions to the DONUT Experiment

- Participation in the data-taking operations (July - October 1997).
- Calibration of the electromagnetic calorimeter.

#### Main contributions to the COSMOS Experiment

- Exposure of a prototype electromagnetic calorimeter at a Fermilab test-beam (July - October 1997).
- Calibration of a prototype electromagnetic calorimeter.

### PRESENTATIONS AT WORKSHOPS, CONFERENCES, SEMINARS

#### International Physics Workshops, Symposia and Conferences

- ‘Neutrino cross-section systematics’ (Invited talk), PHYSTAT-\nu 2019, 22-25 January 2019, CERN.
- ‘GENIE Status and Prospects’ (Invited talk), H2020 Oscillation Physics Workshop, 28-29 November 2018, Valencia, Spain.
- ‘The AGKY Hadronization Model’ (Invited talk), NuSTEC Workshop on Shallow- and Deep-Inelastic Scattering, 11-13 October 2018, Gran Sasso Science Institute (GSSI), L’Aquila, Italy.
- ‘Simulations of Neutrino Interaction Physics’, MCnet Monte Carlo School, 2-7 July 2017, Lund, Sweden
- ‘The Short-Baseline Neutrino Detector (SBND)’ (Invited talk), 11th International Workshop on Neutrino-Nucleus Interactions (NuINT17), 25-30 June 2017, Toronto, Canada.
- ‘Neutrino-Nucleus Interaction Cross-Sections’ (Invited talk), Conference on Science at the Sanford Underground Research Facility (CoSSURF) 2017, 12-16 May 2017, Rapid City, SD, USA.
- ‘The VALOR Oscillation Analysis in T2K/HK, DUNE and SBN’ (Invited talk), Topical Meeting on Neutrino-Nucleus Scattering, 18-20 April 2017, Durham, UK.
- ‘Neutrino-Nucleus Interaction Measurements at the few-GeV Energy Scale: Relevance, Present Status and Future Prospects’ (Invited Talk), 25th International Workshop on Deep Inelastic Scattering and Related Topics (DIS17), 3-7 April 2017, Birmingham, UK
- ‘High-Pressure Gaseous Argon Time Projection Chamber (HPGARTPC) Near Detector (ND) Concept: Evaluation of Systematic Constraints and Impact on Charge-Parity (CP) Symmetry Violation Sensitivity’, 2nd Workshop on Neutrino Near Detectors based on gas TPC, 20-21 March 2017, CERN.
- ‘GENIE Status and Prospects’ (Invited talk), International Workshop on Frontiers in Electroweak Interactions of Leptons and Hadrons (EILH16), 2-6 November 2016, Aligarh, India.

- ‘GENIE Update’ (Invited talk), 10th International Workshop on Neutrino-Nucleus Interactions (NuINT15), 16-21 November 2015, Osaka, Japan.
- ‘Experimental Neutrino Physics’ (Invited lecture), CORFU14 Summer School and Workshop on the Standard Model and Beyond, 3-14 September 2014, Mon-Repos, Corfu, Greece.
- ‘LBNE Flux and Cross-Section Systematic Constraints for 3-Flavour Oscillation Sensitivity Simulation’, CETUP\*14, 10-31 July 2014, Lead, SD, USA.
- ‘GENIE Update’ (Invited talk), 9th International Workshop on Neutrino-Nucleus Interactions (NuINT14), 19-24 May 2014, London, UK.
- ‘T2K Status and Prospects’ (Invited talk), International Committee for Future Accelerators (ICFA) - European Neutrino Town Meeting, 8-10 January 2014, Paris Diderot University, France.
- ‘Electron scattering data and its use in constraining neutrino models’ (Invited review talk), 6th International Workshop on Neutrino-Nucleus Interactions (NuINT09), 18-22 May 2009, Sitges, Spain.
- ‘The path forward: Monte Carlo convergence’ (Invited talk), 6th International Workshop on Neutrino-Nucleus Interactions (NuINT09), 18-22 May 2009, Sitges, Spain.
- ‘The GENIE Universal Neutrino MC Generator’, 45th Karpacz Winter School in Theoretical Physics (Neutrino interactions: from theory to MC simulations), 2-11 February, 2009, Łądek-Zdrój, Poland.
- ‘Recent Results from the MINOS Experiment’ (Invited talk), International Nuclear Physics Conference 2007 (INPC-2007), 3-8 June 2007, Tokyo, Japan.
- ‘Recent Results from the MINOS Experiment’ (Invited talk), International Workshop on Double Beta Decay & Neutrinos (DBD-2007), 11-13 June 2007, Osaka, Japan.
- ‘Overview of Progress in Neutrino Simulation Codes’ (Invited review talk), 5th International Workshop on Neutrino-Nucleus Interactions (NuINT07), 31 May - 3 June 2007, Fermilab, Chicago IL, USA.
- ‘The GENIE Universal Neutrino MC Generator’ (Invited talk), 3rd International Scoping Study’, 24-28 April 2006, Rutherford Appleton Lab, UK.
- ‘Neutrino MC Generators and Nuclear Effects’ (Invited talk), 20th Max Born Symposium (Nuclear Effects in Neutrino Interactions), 7-11 December 2005, Wrocław, Poland.
- ‘The GENIE Universal Neutrino MC Generator’, 4th International Workshop on Neutrino-Nucleus Interactions (NuINT05), 26-29 September 2005, Okayama University, Okayama, Japan.
- ‘Neutrino Interaction Physics and Neutrino MC Event Generators’ (Invited talk), Next Generation of Nucleon Decay and Neutrino Detectors (NNN05), 7-9 April 2005, Aussois, Savoie, France.
- ‘Neutrino Interaction Model Validation’, 3rd International Workshop on Neutrino-Nucleus Interactions (NuINT04), 17-21 March 2004, Laboratori Nazionali del Gran Sasso - INFN, Assergi (L’Aquila), Italy.
- ‘The MINOS Experiment: Current Status and Atmospheric Neutrino Studies’, Recent Advances in High Energy Physics (HEP2003) Annual Meeting Of The Hellenic Society For The Study Of High Energy Physics, 17-29 April 2003, Athens, Greece.
- ‘MINOS Experiment: Characterization of multi-anode PMTs for the MINOS detectors’, Recent Advances in High Energy Physics (HEP2002) Annual Meeting Of The Hellenic Society For The Study Of High Energy Physics, 25-27 April, 2002, Patra, Greece.
- ‘Development of the MINOS detectors’, Recent Advances in High Energy Physics (HEP2001) Annual Meeting Of The Hellenic Society For The Study Of High Energy Physics, 6-8 April 2001, Heraklion, Greece.
- ‘MINOS: Prototype Detector and Toroidal Magnetic Field’, Recent Advances in High Energy Physics (HEP2000) Annual Meeting Of The Hellenic Society For The Study Of High Energy Physics, April 2000, Ioannina, Greece.

#### Seminars and Colloquia

- ‘Neutrino-Nucleus Interaction Simulations’, University of Surrey, 01/05/2018.
- ‘Recent results from the T2K experiment on CP violation’, Cambridge University, 07/03/2017.
- ‘Neutrino Oscillation Results from T2K’, Manchester University, 19/01/2012.



- ‘Neutrino Oscillation Results from T2K’, Birmingham University, 19/10/2011.
- ‘First Neutrino Oscillation Results from T2K’, University College London, 27/05/2011.
- ‘First Neutrino Oscillation Results from T2K’, Rutherford Appleton Lab, 25/05/2011.
- ‘First Neutrino Oscillation Results from T2K’, Sussex University, 12/05/2011.
- ‘First Neutrino Oscillation Results from T2K’, Cambridge University, 10/05/2011.
- ‘First Neutrino Oscillation Results from T2K’, Bristol University, 04/05/2011.
- ‘Neutrino Interaction Modeling and Systematic Uncertainties’, IPPP Durham, 25/01/2010.
- ‘Neutrino Interaction Modeling and Systematic Uncertainties’, Paris LPNHE, GDR Neutrino, 27-28/04/2009.
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## LIST OF PUBLICATIONS AND INTERNAL NOTES

Citations Summary	
Number of papers published in peer-reviewed journals	<b>72</b>
Number of citations	<b>10028</b>
Citations per paper (average)	<b>139.3</b>
$h_{HEP}$ index	<b>42</b>

Source: *INSPIRE HEP*, Updated on September 29th, 2018

## Peer-reviewed journal papers

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