

CURRICULUM VITAE OF DR. ANATAEL CABRERA

Spanish/European. Birth: 30th March 1977ORCID: [0000-0001-5713-3347](https://orcid.org/0000-0001-5713-3347)

Neutrino Particle Physicist upon DPhil at the University of Oxford (2001-2005; UK) in the MINOS experiment (FNAL; US based). CNRS/IN2P3 scientist, since 2007, affiliated to the IJC laboratory (Orsay, France). Director of the underground LNCA laboratory (Chooz, France) since 2014. Spokesperson of both the Double Chooz collaboration (since 2017; past coordinations of both physics and detectors). Spokesperson of the LiquidO proto-collaboration (since 2016). Founder of a) the LPET-OTech consortium (2020; CNRS-INSERM) for medical science, b) the AM-OTech consortium (2020; 5 European institutions, including EDF) for nuclear industry technology, c) the LiquidO proto-collaboration (2016; 16 institutions, 10 countries) and d) the JUNO-SPMT system and collaboration (2015; 8 institutions, 5 countries). CNRS national leader for the Double Chooz experiment (since 2014; 4 laboratories), LiquidO R&D programme (since 2017; 5 laboratories) and JUNO experiment (2018-2019; 5 laboratories). Leader of the scientific definition of the prospected “SuperChooz” experimental scientific programme (in exploration since 2019). Renown expertise in neutrino science, detection, hardware (specially electronics and photon-detection), simulations and high precision (absolute and relative) physics analyses. Main current scientific activities are [a] experimental high precision neutrino oscillation physics in θ_{13} (Double Chooz), θ_{12} , δm^2 , Δm^2 (JUNO) and $>5\sigma$ significance on the Mass Ordering (JUNO and beyond) as well as the novel SuperChooz physics explorations (θ_{12} , δm^2 , θ_{13} , Δm^2 , Unitarity, CPT and CP direct violation sensitivity) and [b] the specialisation of the novel LiquidO for fundamental science in both neutrino (reactor, solar, beam, supernovae and geo) and rare decay ($\beta\beta$ and proton) physics as well as its derived OTech deep-tech for innovation in medical and nuclear industry. Active supervision, mentoring of scientists, science outreach & dissemination and several international collaborations with institutions in the America’s, Asia and Europe.

ACADEMIC POSITIONS

- since 2014 Director LNCA Underground Laboratory. CNRS/CEA (Chooz, France)
- since 2007 National Scientist CNRS/IN2P3 Staff (France)
- since 2020 IJC Laboratory. Université Paris-Saclay (Orsay, France)
- 2019-2018 LAL Laboratory. Université Paris-Saclay (Orsay, France)
- 2018-2007 APC Laboratory. Université Diderot (Paris, France)
- 2008-2006 Marie Curie Intra-European Fellow. APC laboratory. CNRS-IN2P3 (Paris, France)
- 2006-2005 CNRS PostDoc. College de France. CNRS-IN2P3 (Paris, France)

EDUCATION & DEGREES

- 2005-2001 **DPhil/PhD**: Particle Physics. University of Oxford (UK). Supervisor: Prof. A. Weber.
- 2004 Marie Curie Training Fellow. European Center of Theoretical Physics (Trento, Italy)
- 2001-1998 **BSc**: 1st Class Physics (HE-AstroPhysics & Instrumentation). University of Leeds (UK)
- 2001 Researcher Student (LHCb). CERN (France/Switzerland)
- 2000 CERN Summer Research Student (Delphi/LHCb). CERN (France/Switzerland)
- 1999 Research Student. Polymer IRC Research Institute (Leeds, UK)

RESPONSIBILITIES & MANAGEMENT

- since 2021 Leader of the LPET-OTech Consortium. 5 Institutions between CNRS(4) and INSERM(1).*
- since 2020 Leader of the AM-OTech Consortium. 5 European Institutions between Academic (4) and Industry (EDF).*
- since 2020 Leader Dual-Calorimetry Task Force. JUNO International Collaboration.*
- since 2019 Co-Spokesperson LiquidO. International Proto-Collaboration (40scientists).*
- since 2018 Project Leader: Double Chooz, JUNO, LiquidO, LPET SuperChooz groups. IJC Laboratory (Orsay, France).*
- since 2018 National Responsible of LiquidO Project: 4 Laboratories CNRS-IN2P3 (France).*
- since 2017 Spokesperson Double Chooz. International Collaboration (100scientists).*
- since 2014 National Responsible of Double Chooz Project: 4 Laboratories CNRS-IN2P3 (France).*
- since 2013 Member of Institutional & Technical Boards. JUNO International Collaboration.
- since 2009 Member of Executive Committee & Technical Board. Double Chooz Collaboration.
- 2020-2015 Co-Coordinator “Small PMT” System. JUNO International Collaboration.*
- 2019-2018 National Responsible of JUNO Experiment. 5 Laboratories CNRS-IN2P3 (France).*
- 2018-2016 Responsible of the LiquidO. International Proto-Collaboration.
- 2018-2015 Coordination: Physics-Analysis. Double Chooz.*
- 2018-2010 Group Leader: Double Chooz / JUNO / LiquidO. APC Laboratory (Paris, France).*
- 2018-2009 Coordination: Detector(s) Operation & Running. Double Chooz.*
- 2015-2013 Co-Coordination: Electronics/Trigger. JUNO.*
- 2015-2012 Co-Coordination: Detection Systematics. Double Chooz.*
- 2015-2011 Coordination: Energy Reconstruction. Double Chooz.*
- 2015-2007 Coordination: Electronics/DAQ/Online System. Double Chooz.*
- 2012-2009 Co-Coordination: European Team Physics Analysis. Double Chooz.*
- 2010-2009 Co-Coordination: Far Detector Commissioning. Double Chooz.*
- 2013-2006 Responsible: Analysis Data Framework Software & Readout Simulation. Double Chooz.

SCIENTIFIC GRANTS, PUBLICATIONS, COMMUNICATION & OUTREACH

- 2021 ANR-PRC “TEP-OTech” (Approved). Innovation on Medical Physics & Industry.
- 2020-2019 ERC-Synergy (Marked: “A”): Fundamental Physics with LiquidO.
- 2020 EIC-TEP-Open (Marked: “4/5”). Innovation on Nuclear Industry
- 8 Collaboration “First Results Releases”. Including 2 CERN Seminars and 2 talks at the Neutrino Conference).
- 57 Publications. See details in ORCID 0000-0001-5713-3347.
- ≥ 630 Collaboration Internal Documents: Double Chooz (DocDB: ≥ 486), JUNO (DocDB: ≥ 87), LiquidO (≥ 60).
- ≥ 75 Seminars / Colloquia. Many Institutions in the America’s, Asia and Europe.
- ≥ 105 National / International Conference and Workshops Participation.
- ≥ 54 International Conferences Contributions (latest: 47 Talks & 11 Posters).
- 3 Science Outreach Publications within CNRS – 1 Derived Radio Program (France)

*: highlighted responsibilities involving the management of resources (personnel and funding).

SCIENTIFIC RESULTS HIGHLIGHTS (INCLUDING THE MOST RECENT PRIOR TO PUBLICATION):

- 2021-2021 OTech developments are publication embargoed until settling invention & patents validation (ongoing).
 2020 Outreach. “Neutrino: Le Meilleure est a Venir”. CNRS Journal. [Article]
 2020 Neutrino Mass Ordering Resolution Study. ArXiv::2008.11280v1 [Pre-Print]
 2020 Outreach. Double Chooz Results. CNRS/IN2P3 News. [Article]
 2020 Double Chooz Collab.(H. de Kerret *et al.*) Latest Results & New Detection Technique. Nature Physics. [Publication]
 2019 APPEC Interview: “The LiquidO Detection & Physics Status” [Interview]
 2019 LiquidO Proto-Collab.(A. Serafini *et al.*) Neutrino Geoscience Conference (Prague, Czech Republic) [Talk]
 2019 LiquidO Proto-Collab.(P. Ochoa-Ricoux *et al.*) DUNE 4th Detector Workshop (BNL, USA) [Talk]
 2019 LiquidO Proto-Collab.(A. Cabrera *et al.*) First LiquidO Publication – Submitted to a Nature Journal. [Pre-Print]
 2019 LiquidO Proto-Collab.(A. Cabrera *et al.*) Super Chooz First Pre-Release. EPS-HEP Conference (Ghent, Belgium) [Talk]
 2019 LiquidO Proto-Collab.(A. Cabrera *et al.*) LiquidO First Release. CERN Detector Seminar [Seminar]
 2018 LiquidO Collab.(A. Cabrera *et al.*) LiquidO- $\beta\beta$ First Pre-Release. NOW 2018 Conference (Italy) [Talk]
 2016 Double Chooz Collab.(A. Cabrera *et al.*) CERN Colloquium: Release DC-IV First Results. [Seminar]
 2016 Double Chooz Collab.(A. Cabrera *et al.*) Neutrino Conference 2016 (London, UK) [Talk]
 2014 Double Chooz Collab.(A. Cabrera *et al.*) Release DC-III First Results. LAL Laboratory (Orsay) [Seminar]
 2012 DC Collab.(Abe Y. *et al.*) Phys.Rev.Lett. 108.131801 (2012) [Publication]
 2010 DC Collab.(A. Cabrera *et al.*) Neutrino Conference 2010 (Athens, Greece) [Talk].

MENTORING, SUPERVISION & TEACHING

14 Researchers: 2 Marie Curie Fellows and 12 Post-Doc Researchers (including 7 co-mentoring)

Supervision (either directly or “effective” supervision; i.e. leading to the most important theses results)

14 PhD students (3 on-going), including 13 shared supervisions (Institutions: Brasil, China, France, Japan, Russia, USA).
 11 Master/Final Year Project/Research Students (Institutions: China, France, Japan, Spain, USA)

Teaching (limited since academic scientist position has no teaching duties)

- 2018 ISAPP School: “Reactor Neutrino Detection Today” (Ferrara, Italy, Japan)
 9 PhD-level Research Lectures (several institutions: Brasil, France, Italy, Japan, Spain)
 10 Tutorials / Workshops Physics Analysis / Software (Double Chooz)
 2013 Reactor- ν Physics. Undergraduate Master Course. Université Sorbonne Paris Cité (Paris, France)

SCIENTIFIC COLLABORATIONS & VISITING PROFESSORS

- 2021-2020 Sabbatical of Prof. H. Nunokawa (PUC University). IJC Laboratory (France)
 since 2020 Leadership*. LPET-OTech Consortium (~20 scientists, France).
 since 2020 Leadership*. AM-OTech Consortium (~30 scientists, 3 countries).
 since 2018 Coordinator*. France(IJC)-Japan(Tohoku University) Particle Physics Laboratory Project: LiquidO.
 since 2016 Leadership*. LiquidO International Proto-Collaboration (~30 scientists, 10 countries)
 since 2015 Coordinator*. France(IJC)-South Korea(SNU) Particle Physics Laboratory Project: Reactor Neutrino.
 since 2014 Coordinator*. France(IJC)-China (IHEP) Particle Physics Laboratory Project: JUNO.
 since 2013 Coordination*. JUNO International Collaboration (~700 scientists, 77 countries)
 since 2005 Leadership*. Double Chooz International Collaboration (~100 scientists, 7 countries)
 2018-2016 Blaise Pascal Chaire of Prof. F. Suekane, Tohoku University). APC Laboratory (France)
 2018-2014 Coordinator*. France (CNRS-APC) Russian (Kurchatov Institute) Particle Physics Laboratory Project: Double Chooz.
 2015-2013 Coordinator*. France (CNRS-APC) Japan (KEK Laboratory) Particle Physics Laboratory Project: Double Chooz.

SCIENTIFIC EVENT ORGANISATION & COMMITTEES

- Peer Review of Publications (typically ≤ 1 per year): JHEP, JINST, Nature, NIM-A.
 2025 WIN-2025 International Conference Organisation (under preparation). IJC Laboratory.
 2020-2018 Main Host & Scientific Organising Committee. National $\beta\beta$ Physics Workshop (France).
 since 2018 Scientific Organising Committee for Neutrino Physics. France-China Particle Physics Laboratory (France-China).
 2018 Scientific Organising Committee: “Multi-PMT Technology for Large Neutrino Detector” Workshop(s).
 since 2015 Reactor- θ_{13} Group (Daya Bay, Double Chooz, RENO) Steering Committee.
 2018-2015 Funding International Reviewer Panel. SNO+ Experiment NSERC International Committee (Canada).
 2013 Convener: Neutrino Physics. Conference EPS-HEP Neutrino. Stockholm (Sweden).
 2010 Convener: Low Energy Neutrino Physics. Conference Neutrino Oscillation Workshop. Otranto (Italy).

EXPERIMENTAL PHYSICS CONTRIBUTIONS (DETECTION / HARDWARE / SOFTWARE)

- since 2016 Several Prototype Detector LiquidO(2) and JUNO (1). Conception & Design & Running.
 since 2019 Conception & Design (First Sensitivity): “Super Chooz” Experiment (under exploration).
 since 2016 Conception & Design (First Sensitivity): Multi-Ton $\beta\beta$ Experiment (under exploration).
 2018-2016 Conceptual Design: LiquidO Prototype Readout & Electronics (SiC and SiBB).
 2020-2015 Conceptual Design: JUNO ABC Electronics (“ASIC Battery Card”).
 2020-2014 Conception, Design (CDR level) & Construction: JUNO SPMT (25,000 3” PMT full readout) system.
 2015 Design: JUNO Occulting PMT Light Concentrator.
 2014 Conception, Design & Implementation: JUNO Dual Calorimetry Detector.
 2013 Conception, Design & Prototyping: LiquidO Detection.
 2017-2009 Construction, Commissioning & (9 years) Running: Double Chooz Detector(s).
 2017-2007 Design, Commissioning & Running: Double Chooz FADC Readout & DAQ/Online.
 2009-2006 Conception & Implementation: Double Chooz Analysis Framework & Readout Simulation Software.
 since 2003 Multi-Detector Systematic Handling (Super Chooz, JUNO, Double Chooz & MINOS).

LANGUAGES [CEFR]: Spanish (native,C2), English (C2), French (C1/C2), Italian (C1), Portuguese (B1/B2)

HOBBIES: hiking, climbing, cycling, literature, history, cooking and pottery.