

Daniel SUCHET | PhD, Engineer

from École polytechnique
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📄 Short story

Work experience

Research

CNRS-JSPS fellowship

NextPV, RCAST, Tokyo

post-doc under the supervision of Yoshitaka Okada and Jean-François Guillemoles

2016-2017

From cold atoms to hot carriers : quantum processes for energy conversion.

- Optical and electrical characterization
- Material growth (quantum dot, quantum well)
- Physics of Energy Conversion

PhD thesis in Physics

Laboratoire Kastler-Brossel, Paris

Supervisors Frédéric Chevy & Christophe Salomon

2012–2016

Simulating the dynamics of harmonically trapped Weyl particles with cold atoms

- Development of an experimental apparatus (optics, vacuum, electronics)
- Theoretical developments (thermalization, gray optical molasses, effective interactions in mixed dimensions)

Summer school

CERN, Geneva

Supervisor Zaida Conesa del Valle

July-August 2011

Analysis of quark and gluon plasma composition through D0 - leptons azimuthal correlations in p-p and lead-lead collisions in the ALICE experiment.

- Numerical simulations and data analysis

Master internship

Laboratoire Leprince Ringuet, Palaiseau

Supervisor Michel Gonin

Jan–July 2011

Study of the neutrino beam with the close detector INGRID in the T2K experiment.

- Awarded *Prix du Centre de recherche X2008* (best internship completed in a laboratory at École polytechnique).

Collaboration

Observatory of Paris (SYRTE)

Supervisor Jean Souchay

2007–2011

Development of the database for the Large Quasar Astrometric Catalogue (LQAC)

Teaching

Lectures

The University of Tokyo

Basic Energy Engineering - an introduction to Energy

2017

Teaching assistant

École polytechnique

Physics department

2009–2015

- Physics : tutorial classes for foreign students and student projects supervision.
- English : tutorial classes.

Team leader and French representative

French Physical Society

for the International Physicists' Tournament (IPT)

2012-2015

2013: 3rd place. 2014: 1st place. 2015: 3rd place, award from École polytechnique.

Scientific trainer

Dugny - le Bourget

for primary school teachers

2008

Scientific Vulgarization

Scientific curator <i>For the exhibition Photonfutur dedicated to photovoltaic resources</i>	ESPGG-ESPCI 2016
Communication group <i>for the Laboratoire Kastler Brossel</i>	Ecole Normale Supérieure, Paris 2014–2015
Award <i>for the short film "One hundred years of Physics and Magic, a science fiction"</i>	Diagonale Paris Saclay 2015
Lecturer <i>at the physics department of the science museum</i>	Palais de la Découverte, Paris 2012–2013
Scientific blogger <i>Science news and science fiction</i>	ActuSF 2012–2014
Public lectures <i>Looking At Science through Fiction</i> (National Center for Scientific Research, French Physical Society, science festivals, theaters)	French Physical Society Since 2011

Project management

Editor in chief <i>Scientific journal Emergent Scientist</i> A peer-reviewed open-access student-oriented journal, published by EDP Science	2016
Vice president <i>Local Organizing Committee for the 8th IPT</i> (120 participants from 15 countries, 110 000€ budget, supported by the National Academy of Science)	2016
National representative <i>International Organizing Committee for the IPT</i>	2012–2015
Assistant treasurer Young Physicists Meeting (100 participants, 15 000€ budget)	2014

Academics

PhD in Physics <i>Specialty : quantum mechanics</i>	Université Pierre-et-Marie-Curie, Paris 2016
Engineer degree <i>Academic promotion X2008, Multidisciplinary scientific training</i>	École polytechnique, Palaiseau 2012
Master 2 <i>International Centre for Fundamental Physics</i> Major : Quantum Physics (rank : 3)	École Normale Supérieure, Paris, Paris 2011–2012
Master 1 <i>High Energy Physics</i>	École polytechnique, Palaiseau 2010–2011

Computer skills

- C++, ROOT, AliROOT
- Mathematica
- Python
- L^AT_EX
- Basic, Fortran

French: Mother tongue.

Anglais: Fluent (TA at École polytechnique, internship in London).

Allemand: Intermediate (short and long-term visits to Germany).

Japonais: Basics.

Publications

Peer-reviewed articles

- J.F. Guillemoles, D. Suchet *et al.*, "Material Challenges for Solar Cells in the XXIst century", submitted *Science and Technology of Advanced Materials*
- A. Delamarre, D. Suchet, N Cavassilas, F.Michelini, M. Bescond, Y.Okada, M. Sugiyama, and JF Guillemoles, "An electronic ratchet is required in nanostructured intermediate band solar cells", submitted to *Applied Physics Letters*.
- D. Suchet, A. Jeantet, T. Elghozi and Z. Jehl, "Towards an intrinsic definition of intermittency, the case study of electricity in France", submitted to *Energy Policy*.
- D. Suchet, Z. Jehl, J.F. Guillemoles, Y. Okada, "Evaporative cooling of hot carriers", *Phys. Rev. Applied*, **vol** 8, 034030, 2017.
- Z. Jehl, D. Suchet, A Julian, C. Bernard, N. Miyashita, F. Gibelli, Y. Okada, J.-F. Guillemoles, "Modeling and characterization of double resonant tunneling diodes for application as energy selective contacts in hot carrier solar cells", *Proc. of SPIE*, **vol** 10099, p.100990N, 2017.
- D. Suchet, W. Zhigang, F. Chevy, G. Bruun, "Long ranged mediated interaction in mixed dimensions", *Physical Review A*, **vol** 95, no. 4, p. 043643, Avr 2017
- D. Suchet, M. Rabinovic, T. Reimann, N. Kretschmar, F Sievers, C. Salomon, J. Lau, O. Goulko, C. Lobo, and F. Chevy, "Analog simulation of Weyl particles with cold atoms", *EuroPhysics Letters*, **vol** 114, n.2, 2016.
- F. Sievers, N. Kretschmar, D. R. Fernandes, D. Suchet, M. Rabinovic, S. Wu, C. V. Parker, L. Khaykovich, C. Salomon and F. Chevy. "Simultaneous sub-Doppler laser cooling of fermionic ${}^6\text{Li}$ and ${}^{40}\text{K}$ on the D_1 line: Theory and experiment", *Physical Review A*, **vol** 91, no. 2, p. 023426, Feb 2015
- J. Souchay, A. H. Andrei, C. Barache, S. Bouquillon, D. Suchet, F. Taris, R. Peralta, "The second release of the large quasar astrometric catalogue (LQAC)", *Astronomy and Astrophysics*, **vol** 537, Nov 2011
- J. Souchay, A. H. Andrei, C. Barache, S. Bouquillon, A.-M. Gontier, S. B. Lambert, C. Le Poncin-Lafitte, F. Taris, E. F. Arias, D. Suchet, M. Baudin, "The construction of the large quasar astrometric catalogue (LQAC)", *Astronomy and Astrophysics*, **vol** 494, Issue 2, Feb 2009

Large audience articles

- D. Suchet, "Launch of Emergent Scientist: hands on peer-review publication for science students (editorial)", *Emergent Scientist*, **vol** 1, 2017
- D. Suchet, "La Quête des Températures Ultrabasses", in *Le Froid*, edited by D. Chartier (UQAM), 2017 (à paraître)
- D. Suchet, "Traduire la Physique", *Ecritures*, **vol** 9, 2017
- D. Suchet et D. Elghozi, "Cent ans de Physique et de Magie, une illustration du Tractatus des Gentils Commentateurs Multidisciplinaires", *Alliage*, **vol** 76, 2016