

# Daniel SUCHET | PhD, Engineer

from École polytechnique  
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📖 Short story

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## 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)

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### 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

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## Scientific Vulgarization

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

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## Project management

<b>Editor in chief</b> <i>Scientific journal Emergent Scientist</i> A peer-reviewed open-access student-oriented journal, edited by EDP Science	2016
<b>Vice president</b> <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
<b>National representative</b> <i>International Organizing Committee for the IPT</i>	2012–2015
<b>Assistant treasurer</b> Young Physicists Meeting (100 participants, 15 000€ budget)	2014

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## Academics

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

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## Computer skills

- C++, ROOT, AliROOT
- Mathematica
- Python
- L<sup>A</sup>T<sub>E</sub>X
- 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", soumis à *Science and Technology of Advanced Materials*
- D. Suchet, Z. Jehl, J.F. Guillemoles, Y. Okada, "Evaporative cooling of hot carriers", soumis à *Physical Review Applied*
- 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.
- J. Lau, D. Suchet, O. Goulko, M. Rabinovic, T. Reimann, C. Salomon, F. Chevy and C. Lobo, *Quasi-Thermalisation of Fermions in a Quadrupole Trap*, en préparation
- 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, "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