

# Adam Rançon

✉ adam.rancon@univ-lille.fr

## Research Experience

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<b>Maitre de Conférences</b> <i>Laboratoire de Physique des Lasers, Atomes et Molécules</i>	<b>Lille, France</b> 2016 -
<b>Postdoctoral Research Fellow. Tommaso Roscilde's group.</b> <i>École Normale Supérieure de Lyon</i>	<b>Lyon, France</b> 2014-2016
<b>Postdoctoral Research Fellow. Kathryn Levin's group.</b> <i>James Franck Institute, University of Chicago</i>	<b>Chicago, USA</b> 2012-2014
<b>PhD thesis under the supervision of Nicolas Dupuis.</b> <i>Laboratoire de Physique Théorique de la Matière Condensée</i>	<b>Paris, France</b> 2009-2012

## Education

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<b>Université Pierre et Marie Curie</b> <i>PhD in Physics. Obtained with highest honors.</i>	<b>Paris, France</b> 2009-2012
<b>École Normale Supérieure</b> <i>Master's degree in Physics.</i> Major in theoretical quantum physics.	<b>Paris, France</b> 2007-2009
<b>École Normale Supérieure</b> <i>Bachelors degree in Physics.</i>	<b>Paris, France</b> 2006-2007

## Awards and Honors

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<b>Qualification 'Maitre de Conférence'</b> <i>France</i>	2013
<b>Doctoral degree in Physics. Obtained with highest honors.</b> <i>Université Pierre et Marie Curie, Paris, France</i>	2012
<b>PhD fellowship of the French Ministry of Education and Research</b> <i>Paris, France</i>	2009
<b>Diploma of the Ecole Normale Supérieure</b> <i>Paris, France</i>	2009

## Teaching and supervision

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### Teaching

<b>Université de Lille</b> <i>192 hours per year, undergraduate level.</i> Tutorial and practical exercises in classical mechanics, wave mechanics. Lectures in mathematics for physicists.	<b>Lille, France</b> 2016 onwards
<b>École Normale Supérieure de Lyon</b> <i>Bonus lecture (2 hours) for the Master 2 course "Phase transition and critical phenomena".</i> Brief introduction to the functional renormalization group.	<b>Lyon, France</b> 2014-2015
<b>Université Pierre et Marie Curie</b> <i>64 hours per year, first and second year undergraduate level.</i> Tutorial and practical exercises in electromagnetism and thermodynamics.	<b>Paris, France</b> 2009-2012

### PhD student supervision

Involved in the supervision of two PhD students at the *University of Chicago*.

## Skills

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**Programming:** Proficient in Matlab, Mathematica, Python and C. Basics in Machine Learning.

**English:** Spoken and written.

**French:** Mother tongue.

## Referee

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Referee for peer-reviewed journals : Physical Review Letter, Nature Communication, Physical Review A, B, E and X, Journal of Physics A.

## Invited talks at conferences and workshops

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- 2014 **Conference Exact Renormalization Group 2014**, Lefkada, Greece.  
“Fate of the amplitude mode in the vicinity of a quantum critical point”
- 2014 **Workshop “Higgs Modes in Condensed Matter and Quantum Gases”**, Kyoto, Japan.  
“Fate of the amplitude mode in the vicinity of a quantum critical point”
- 2012 **Conference Exact Renormalization Group 2012**, Aussois, France.  
“Quantum criticality and universality of a Bose gas near the Mott transition”

## Invited seminars

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- 2019 **CESAM Research Unit**, Université de Liège, Belgique.  
“Making the coherent state path integral great again: insights from stochastic calculus”
- 2018 **Institute of Theoretical Physics**, Universitat Frankfurt, Germany.  
“A functional RG approach to the quantum XY model”
- 2017 **Institute of Physics**, Zagreb, Croatia.  
“Multiple Transitions of coupled Atom-Molecule Bosonic Mixtures in Two Dimensions”
- 2016 **Laboratoire de Physique des Lasers, Atomes et Molécules**, Lille, France.  
“Critical Casimir forces and the equation of state of quantum critical systems”
- 2016 **Laboratoire de Physique Théorique**, Toulouse, France.  
“Critical Casimir forces and the equation of state of quantum critical systems”
- 2015 **Laboratoire de Physique du Solide**, Orsay, France.  
“A functional renormalization group approach to quantum spins”
- 2015 **Centre de Physique Théorique de l'École Polytechnique**, Palaiseau, France.  
“A functional renormalization group approach to quantum spins”
- 2015 **Laboratoire de Physique Théorique**, Toulouse, France.  
“A functional renormalization group approach to quantum spins”
- 2014 **Max Plank Institute**, Stuttgart, Germany.  
“A functional renormalization group approach to quantum spin models”
- 2014 **Laboratoire de Physique Théorique et Modélisation**, Cergy-Pontoise, France.  
“Universal thermodynamics of the superfluid to Mott insulator transition”
- 2014 **Laboratoire de Physique, École Normale Supérieure de Lyon**, Lyon, France.  
“Universal thermodynamics and fate of the amplitude mode in the quantum  $O(N)$  model”
- 2014 **Institut d'Optique de Bordeaux**, Bordeaux, France.  
“Quantum phase transition and universal thermodynamics of a Bose gas”
- 2012 **Condensed matter theory seminars at the École Normale Supérieure**, Paris, France.  
“Quantum criticality of a Bose gas near the Mott transition”
- 2012 **Institut d'Optique de Paris**, Palaiseau, France.  
“Quantum phase transition and universality in Bose gases”

## Oral and poster contributions at conferences, workshops and schools

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- 2018 **Conference Exact Renormalization Group 2018**, Paris, France.  
“FRG for systems with local non-linear constraints”
- 2016 **Conference Exact Renormalization Group 2016**, Trieste, Italy.  
“Critical Casimir forces and the equation of state of quantum critical systems”
- 2016 **Journées de la Matière Condensée 15**, Bordeaux, France.  
“Critical Casimir forces and the equation of state of quantum critical systems”

- 2015 **Workshop “Topological phases in Condensed Matter and Cold Atoms systems”**, *Poster*, Cargèse, France.  
“A Tensor Renormalization group approach to the Fully Frustrated Quantum Ising Model”
- 2014 **APS March Meeting 2014**, *Talk*, Denver, USA.  
“Equilibrating Dynamics in Quenched Bose Gases” and “Universal thermodynamics of the superfluid to Mott insulator transition”
- 2013 **APS DAMOP Meeting 2013**, *Talk*, Quebec City, Canada.  
“Interaction quench in presence of a thermal bath”
- 2013 **APS March Meeting 2013**, *Talk*, Baltimore, USA.  
“Interaction quench in presence of a thermal bath”
- 2012 **Workshop “Lyon Bose-Einstein Condensate 2012”**, *Poster*, Lyon, France.  
“Universal thermodynamics of a Bose gas near the Mott transition”
- 2011 **Cargese summer school “Disordered Systems: From Condensed-Matter Physics to Ultracold Atomic Gases”**, *Poster*, Cargese, France.  
“Strongly correlated superfluid near the Mott transition”
- 2011 **Les Houches summer school “Strongly correlated electronic systems, beyond Fermi liquid theory”**, *Poster*, Les Houches, France.  
“Strongly correlated superfluid near the Mott transition”
- 2010 **Conference Exact Renormalization Group 2010**, *Talk*, Corfu, Greece.  
“A Non-Perturbative Renormalization Group approach to lattice bosons : the superfluid to Mott insulator transition”