

# Thibaut Coudarchet

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## CURRENT POSITION

**Postdoctoral researcher** November 2021 - Today  
Institut für Theoretische Physik (ITP), Heidelberg University, Germany

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## FORMER POSITIONS

**Postdoctoral researcher** November 2021 - September 2023  
Instituto de Física Teórica (IFT), Autonomous University of Madrid, Spain

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## EDUCATION

**Ph.D in theoretical high energy physics** October 2018 - September 2021  
Centre de Physique Théorique (CPHT), École Polytechnique, Palaiseau, France  
• Supervised by Hervé Partouche  
• Title of the thesis: “String theory: Supersymmetry breaking, moduli stabilization and cosmological considerations”

**Master of Science, fundamental physics** September 2014 - March 2016  
École Normale Supérieure de Lyon (ENSL), Lyon, France  
**First Class Honours**

**Bachelor of Science, fundamental physics** September 2013 - May 2014  
ENSL, Lyon, France  
**First Class Honours**

**Classes préparatoires (preparatory class in mathematics)** September 2011 - June 2013  
Lycée Blaise Pascal, Clermont-Ferrand, France  
**First Class Honours**

**Baccalauréat scientifique (High School diploma in Science)** July 2011  
Lycée René Descartes, Cournon d’Auvergne, France  
**First Class Honours**

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## INTERNSHIPS

**Four months internship at CPHT** April - July 2017  
Quantum stability of flat spacetime: A superstring point of view

**Four months internship in the laboratory of physics of ENSL** April - July 2016  
Study of a double deformation of the principal chiral model

**Three months internship at the University of Southampton, School of physics and Astronomy, Southampton, UK** May - July 2015  
Dark Matter production in the mono-photon channel at the LHC

**Two months internship in the laboratory of physics of ENSL** June - July 2014  
Speed statistics in turbulent thermal convection

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## INVITED SPEAKER

- Quantum Gravity, Strings and the Swampland, Corfu, Greece (2024/09/04)

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## CONTRIBUTED TALKS

- StringPheno 2024, Padova, Italy (2024/06/24)
- EuroStrings 2023, Gijón, Spain (2023/04/24)
- Iberian Strings 2022, Gijón, Spain (2022/03/24)
- Humboldt Kolleg Frontiers in Physics: From the Electroweak to the Planck Scales, Corfu, Greece (2019/09/17)
- StringPheno 2019, Geneva, Switzerland (2019/06/25)

## PUBLICATIONS

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- T. Coudarchet, “Hiding the extra dimensions: A review on scale separation in string theory,” Phys. Rept. **1064** (2024), 1-28 [arXiv:2311.12105 [hep-th]].
- R. Carrasco, T. Coudarchet, F. Marchesano and D. Prieto, “New families of scale separated vacua,” JHEP **11** (2023), 094 [arXiv:2309.00043 [hep-th]].
- T. Coudarchet, F. Marchesano, D. Prieto and M. A. Urkiola, “Symmetric fluxes and small tadpoles,” JHEP **08** (2023), 016 [arXiv:2304.04789 [hep-th]].
- T. Coudarchet, M. Marchesano, D. Prieto and M. A. Urkiola, “Analytics of type IIB flux vacua and their mass spectra,” [arXiv:2212.02533 [hep-th]].
- T. Coudarchet, E. Dudas and H. Partouche, “Geometry of orientifold vacua and supersymmetry breaking”, JHEP **07** (2021), 104 [arXiv:2105.06913 [hep-th]].
- T. Coudarchet and H. Partouche, “Two-point functions of Neumann-Dirichlet open-string sector moduli”, Int. J. Mod. Phys. A **36** (2021) no.34n35, 2141008 [arXiv:2012.14442 [hep-th]].
- T. Coudarchet and H. Partouche, “One-loop masses of Neumann-Dirichlet open strings and boundary-changing vertex operators”, [arXiv:2011.13725 [hep-th]].
- S. Abel, T. Coudarchet and H. Partouche, “On the stability of open-string orbifold models with broken supersymmetry”, Nucl. Phys. B **957** (2020), 115100 [arXiv:2003.02545 [hep-th]].
- T. Coudarchet and H. Partouche, “Moduli stability in type I string orbifold models,” PoS **CORFU2019** (2020), 164 [arXiv:2005.01764 [hep-th]].
- T. Coudarchet, L. Heurtier and H. Partouche, “Spontaneous dark-matter mass generation along cosmological attractors in string theory”, JHEP **03** (2019), 117 [arXiv:1812.10134 [hep-th]].
- T. Coudarchet, L. Heurtier and H. Partouche, “Spontaneous Freeze Out of Dark Matter,” PoS **CORFU2019** (2020), 136 [arXiv:1912.10276 [hep-th]].
- T. Coudarchet and H. Partouche, “Quantum no-scale regimes and moduli dynamics”, Nucl. Phys. B **933** (2018), 134-184 [arXiv:1804.00466 [hep-th]].
- T. Coudarchet, C. Fleming and H. Partouche. “Quantum no-scale regimes and moduli dynamics”, Nucl. Phys. B **930** (2018), 235-254 [arXiv:1711.09122 [hep-th]].
- O. Liot, Q. Ehlinger, E. Rusaouën, T. Coudarchet, J. Salort and F. Chillà, “Velocity fluctuations and boundary layer structure in a rough Rayleigh-Bénard cell filled with water”, Physical Review Fluids
- O. Liot, F. Seychelles, F. Zonta, S. Chibbaro, T. Coudarchet, Y. Gasteuil, J.F. Pinton, J. Salort and F. Chillà, “Simultaneous temperature and velocity Lagrangian measurements in turbulent thermal convection”, Journal of Fluid Mechanics **794** (2015) [arXiv:1508.06219v1 [physics.flu-dyn]]

## COMPUTER PROFICIENCIES

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**General skills:**  $\text{\LaTeX}$ , Word processing, spreadsheet program

**Programming languages:** Python, Matlab, Mathematica, Root, HTML, PHP

### SKILLS

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**Languages:** French (mother tongue), Fluent in English, Conversational Spanish

**Certifications:** First aid

### INTERESTS

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**Sports:** Ju-jitsu, circus arts, badminton

**Miscellaneous:** Astrophotography, cinema, guitar, poker