Thibaut Coudarchet

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CURRENT POSITION

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

FORMER POSITIONS

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

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 (26/01/2017) 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**

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

TEACHING

String theory I (x2) October 2025 - February 2026
Head tutor (unique group). Creation of exercise sheets and correction in class. October 2024 - February 2025
Lecturer: Prof. A. Hebecker

General relativity April 2024 - July 2024
Tutor. Responsible for correcting tutorial exercises and assessing weekly handwritten student submissions. Lecturer: Prof. L. Amendola

INVITED SPEAKER

- Strings and Cosmology, Annecy, France (2025/12/10)
- Quantum Gravity, Strings and the Swampland, Corfu, Greece (2024/09/04)

CONTRIBUTED TALKS

- StringPheno 2025, Boston, USA (2025/07/07)
- 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

- T. Coudarchet, A. Hebecker, J. Jaeckel and J. Steiner, "The String Theory Photoverse," [arXiv:2510.12874 [hep-th]].
- 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]]

BOOK

- T. Coudarchet, "Découvrir la physique fondamentale - Comprendre les théories d'hier et d'aujourd'hui," Éditions Matériologiques, 2025, ISBN 978-2-37361-477-0.

COMPUTER PROFICIENCIES

General skills: LaTeX, Word processing, spreadsheet program
Programming languages: Python, Matlab, Mathematica, Root, HTML, PHP

SKILLS

Languages: French (mother tongue), Fluent in English, Conversational Spanish
Certifications: First aid

INTERESTS

Sports: Ju-jitsu, circus arts, badminton
Miscellaneaous: Astrophotography, cinema, guitar, poker