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## LPTENS - Laboratoire de physique théorique de l'ENS

Rapport Hcéres

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## REPORT ON THE RESEARCH UNIT:

Laboratoire de Physique Théorique de l'École  
Normale Supérieure  
LPT-ENS

## UNDER THE SUPERVISION OF THE FOLLOWING INSTITUTIONS AND RESEARCH BODIES:

École Normale Supérieure - ENS  
Université Pierre et Marie Curie  
Centre National de la Recherche Scientifique -  
CNRS

**ÉVALUATION CAMPAIGN 2017-2018**  
GROUP D



In the name of Hcéres<sup>1</sup> :

Michel Cosnard, President

In the name of the expert committee<sup>2</sup> :

Marc Henneaux, Chairman of the  
committee

Under the decree No.2014-1365 dated 14 November 2014,

<sup>1</sup> The president of HCERES "countersigns the evaluation reports set up by the expert committees and signed by their chairman." (Article 8, paragraph 5);

<sup>2</sup> The evaluation reports "are signed by the chairman of the expert committee". (Article 11, paragraph 2).

This report is the sole result of the unit's evaluation by the expert committee, the composition of which is specified below. The assessments contained herein are the expression of an independent and collegial reviewing by the committee.

## UNIT PRESENTATION

|  |   |
|--|---|
| <b>Unit name:</b>                        | Laboratoire de Physique Théorique de l'École Normale Supérieure |
| <b>Unit acronym:</b>                     | LPT-ENS   |
| <b>Requested label:</b>                  | UMR   |
| <b>Application type:</b>                 | Renewal   |
| <b>Current number:</b>                   | UMR 8549  |
| <b>Head of the unit<br/>(2017-2018):</b> | Mr Constantin BACHAS  |
| <b>Project leader<br/>(2019-2023):</b>   | Mr Denis BERNARD  |
| <b>Number of teams:</b>                  | 2   |

## COMMITTEE MEMBERS

|  |   |
|--|---|
| <b>Chair:</b>  | Mr Marc HENNEAUX, université libre de Bruxelles, Belgique   |
| <b>Experts:</b>  | Mr Fabian H.L. ESSLER, university of Oxford, United Kingdom<br>Mr Eric RAGOUCY, CNRS LAPTH (representative of CoNRS)<br>Mr Emmanuel TRIZAC, université Paris Sud<br>Mr Dimitrios TSIMPIS, université Lyon 1 (representative of CNU) |
| <b>HCERES scientific officer:</b>                              | Mr Yannis KARYOTAKIS  |
| <b>Representatives of supervising institutions and bodies:</b> | Mr Yves LASZLO, ENS PARIS<br>Mr Bart VAN TIGGELEN, CNRS<br>Mr Pascal VINCENT, U PARIS 6   |

## INTRODUCTION

### HISTORY AND GEOGRAPHICAL LOCATION OF THE UNIT

The LPTENS was founded in 1974 by Philippe MEYER and Claude BOUCHIAT when a group of theoretical physicists (high energy physics and particle physics) moved from the LPTHE of the university of Orsay to the École Normale Supérieure in Paris. LPTENS is located 24, rue Lhomond, in Paris.

### MANAGEMENT TEAM

Mr Constantin BACHAS (Directeur),  
Mr Rémi MONASSON and Mr Jan TROOST (responsables d'équipes),  
Mr Kay WIESE (assistant de prévention)  
Mr Marc-Thierry JAEKEL (informatique)  
Ms Sandrine PATACCHINI and Ms Viviane SEBILLE (administration-gestion)

### HCERES NOMENCLATURE

ST2 Physics

### SCIENTIFIC DOMAIN

The research of the laboratory was initially devoted to theoretical high-energy physics. It has expanded to cover a much broader range of topics. LPTENS is organized now in two teams.

Team A covers the study of the fundamental interactions between particles and fields, which includes quantum field theory, string theory, quantum gravity and applications.

Team B works on statistical physics and its numerous applications, which include many-body quantum mechanics, glasses, biophysics and combinatorial optimization.

## UNIT WORKFORCE

| Unit workforce  | Number<br>30/06/2017 | Number<br>01/01/2019 |
|---|----------------------|----------------------|
| <b>Permanent staff</b>  |                      |                      |
| Full professors and similar positions   | 3                    | 3                    |
| Assistant professors and similar positions  | 2                    | 2                    |
| Full time research directors (Directeurs de recherche) and similar positions                    | 10                   | 9                    |
| Full time research associates (Chargés de recherche) and similar positions                      | 5                    | 6                    |
| Other scientists ("Conservateurs, cadres scientifiques des EPIC, fondations, industries, etc.") | 0                    | 0                    |
| High school teachers  | 0                    | 0                    |
| Supporting personnel (ITAs, BIATSSs and others, notably of EPICs)                               | 2                    | 2                    |
| <b>TOTAL permanent staff</b>  | <b>22</b>            | <b>22</b>            |
| <b>Non-permanent staff</b>  |                      |                      |
| Non-permanent professors and associate professors, including emeritus                           | 3                    |                      |
| Non-permanent full time scientists, including emeritus, post-docs                               | 17                   |                      |
| Non-permanent supporting personnel  | 0                    |                      |
| PhD Students  | 18                   |                      |
| <b>TOTAL non-permanent staff</b>  | <b>38</b>            |                      |
|   |                      |                      |
| <b>TOTAL unit</b>   | <b>60</b>            |                      |

## GLOBAL ASSESSMENT OF THE UNIT

LPTENS is an outstanding research unit with exceptional international visibility. It has contributed leading breakthroughs in theoretical physics and continues to pursue outstanding research with the same vigour and excellence.

The members of the laboratory regularly participate in outreach activities where the latest developments in theoretical physics are made available to the public at large (popular lectures, radio or television interviews, press articles).

The unit is extremely attractive to PhD students and postdocs due the excellence of its research and the involvement of its members in teaching and training through research.

The coexistence of a great variety of research directions with a fruitful overlap between themes and methods is a remarkable feature of the laboratory. There is a strong feeling of belonging and shared values amongst all members of the laboratory.

The committee is impressed by the scientific strategy as well as by the broadness and depth of the projects. It is convinced that significant progress will continue to be achieved with the same exceptional success.

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2 rue Albert Einstein  
75013 Paris, France  
T. 33 (0)1 55 55 60 10

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