



# LNCMI - Laboratoire national des champs magnétiques intenses

Rapport Hcéres

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# HCERES

High Council for the Evaluation of Research  
and Higher Education

Research units

HCERES report on research unit:

Laboratoire National des Champs Magnétiques

Intenses

LNCMI

Under the supervision of  
the following institutions  
and research bodies:

Université Joseph Fourier – Grenoble – UJF

Université Toulouse 3 – Paul Sabatier – UPS

Institut National des Sciences Appliquées de Toulouse

Centre National de la Recherche Scientifique – CNRS

# HCERES

High Council for the Evaluation of Research  
and Higher Education

Research units

*In the name of HCERES,<sup>1</sup>*

Didier HOUSSIN, president

*In the name of the experts committee,<sup>2</sup>*

Olivier THOMAS, chairman of the committee

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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 experts 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)

# Evaluation report

This report is the result of the evaluation by the experts committee, the composition of which is specified below.

The assessments contained herein are the expression of an independent and collegial deliberation of the committee.

Unit name:	Laboratoire National des Champs Magnétiques Intenses
Unit acronym:	LNCMI
Label requested:	UPR
Present no.:	UPR 3228
Name of Director (2014-2015):	Mr Geert RIKKEN
Name of Project Leader (2016-2020):	Mr Geert RIKKEN

## Expert committee members

Chair:	Mr Olivier THOMAS, Aix Marseille Université
Experts:	Ms Catherine GOURDON, Université Pierre et Marie Curie - Paris 6
	Mr Luc LE GRATIET, CNRS, Marcoussis
	Mr Philippe MENDELS, Université Paris Sud (representative of CNU)
	Mr Eric PALM, National High Magnetic Field Laboratory, Tallahassee, USA
	Mr Jean-Pascal RUEFF, Synchrotron SOLEIL (representative of CoNRS)

Scientific delegate representing the HCERES:

Ms Sylvie MAGNIER

## Representatives of the unit's supervising institutions and bodies:

Mr Éric BENOIST (représentant de l'École Doctorale n°482 « Sciences de la Matière »)

Mr Johann COLLOT (représentant de l'École Doctorale n°47 « École Doctorale de Physique de Grenoble »)

Mr Francis DEMANGEOT, Université Toulouse 3

Mr Marc SAVOIT, INSA Toulouse

Ms Amina TALEB, CNRS

Mr Jean-Pierre TRAVERS, Université Grenoble 1

Mr Alexis VALENTIN, Université Toulouse 3

# 1 • Introduction

## History and geographical location of the unit

The “Laboratoire National des Champs Magnétiques Intenses” (LNCMI) is “Unité Propre” of CNRS (UPR) and “Infrastructure de Recherche” (IR), associated with INSA Toulouse, Université Grenoble 1 and Université Toulouse 3, acting as a national user facility for high magnetic field research. LNCMI results from the merging in 2009 of “Laboratoire National des Champs Magnétiques Pulsés” (LNCMP) in Toulouse and “Laboratoire des Champs Magnétiques Intenses” (LCMI) in Grenoble.

LNCMI covers all aspects of magnet technology, both pulsed and static, and of research in high magnetic fields as well as the development of associated instrumentation. Its missions are: (i) to generate the highest possible magnetic fields for research purposes; (ii) to use these fields for in-house research and to develop the necessary scientific instrumentation; (iii) to provide access to qualified French and foreign users to these high magnetic fields and the surrounding scientific infrastructure.

LNCMI is located on two sites: Grenoble (CNRS campus on “Polygone Scientifique”) and Toulouse (Rangueil campus), 500 km apart. In the following these are named LNCMI-G and LNCMI-T.

## Management team

The management team of the LNCMI consists of a director (Mr Geert RIKKEN) who divides his time between the two sites, and two deputy directors, one for the LNCMI-G (Ms Françoise HIPPERT) and one for the LNCMI-T (Mr Oliver PORTUGALL).

## HCERES nomenclature

ST2 Physique.

## Unit workforce

Unit workforce	Number as at 30/06/2014	Number as at 01/01/2016
<b>N1:</b> Permanent professors and similar positions	15	15
<b>N2:</b> Permanent researchers from Institutions and similar positions	19	18
<b>N3:</b> Other permanent staff (without research duties)	60	58
<b>N4:</b> Other professors (Emeritus Professor, on-contract Professor, etc.)	2	
<b>N5:</b> Other researchers (Emeritus Research Director, Postdoctoral students, visitors, etc.)	13	2
<b>N6:</b> Other contractual staff (without research duties)	10	1
<b>TOTAL N1 to N6</b>	<b>119</b>	<b>94</b>

Unit workforce	Number as at 30/06/2014	Number as at 01/01/2016
Doctoral students	14	
Theses defended	22	
Postdoctoral students having spent at least 12 months in the unit	3	
Number of Research Supervisor Qualifications (HDR) taken	5	
Qualified research supervisors (with an HDR) or similar positions	26	24

## 2 • Overall assessment of the unit

### Global assessment of the unit

LNCMI is an excellent laboratory and user facility. The two sites - Grenoble and Toulouse - are very complementary (DC magnetic fields in Grenoble and pulsed magnetic fields in Toulouse) and a good synergy is being promoted both in scientific and technical issues. LNCMI develops technical researches on magnet technology and instrumentation under high fields as well as scientific research on different topics: nanophysics and semiconductors, strongly correlated electron systems, magnetism, magnetoscience, optics and dilute matter. As a user facility LNCMI is visited every year by around 200 scientists from all over the world who are attracted by the quality of the instruments and the high level of expertise of the technical and scientific staff. The scientific and instrumental excellence that has been developed by the LNCMI, enabled it to gain a strong international recognition in various fields of condensed matter physics. The projects for the next 5 years are ambitious and if properly funded will give LNCMI the proper conditions for remaining a world-class facility.

### Strengths and opportunities in relation to the context

The excellent magnets and infrastructure along with first-rate technical and scientific staff are obvious strengths of the unit. Outstanding instrumental developments have allowed several important scientific breakthroughs.

Real opportunities exist in Grenoble for collaboration with the beam-line facilities to provide high fields to users of both neutron and photon sources.

The unit has a remarkable implication in training. The quality of defended PhDs is very high as evidenced by the publications.

### Weaknesses and threats related to the context

- funding for renewal and upgrade of aging facilities should be secured (DC converters in Grenoble);
- increasing cost of electricity will need a commensurate increase in budget;
- the very interesting developments around neutron and X-ray sources need increasing manpower if leadership is to be maintained;
- the number of PhD students is small in a competitive environment for attracting students in physics.

### Recommendations

The committee recommends to:

- continue developing world-class instrumentation and science;

- continue to consolidate the relationship between the two sites even if their merger in 2009 has been a real success;
- develop links with industry and promote technology transfer based on the unique advanced instrumentation know-how available in the laboratory;
- increase the number of PhD students;
- develop activities around neutron and X-Ray sources;
- develop new partnerships within European high magnetic field facility (EMFL).