

LABORATOIRE DE PHYSIQUE III: TP 3

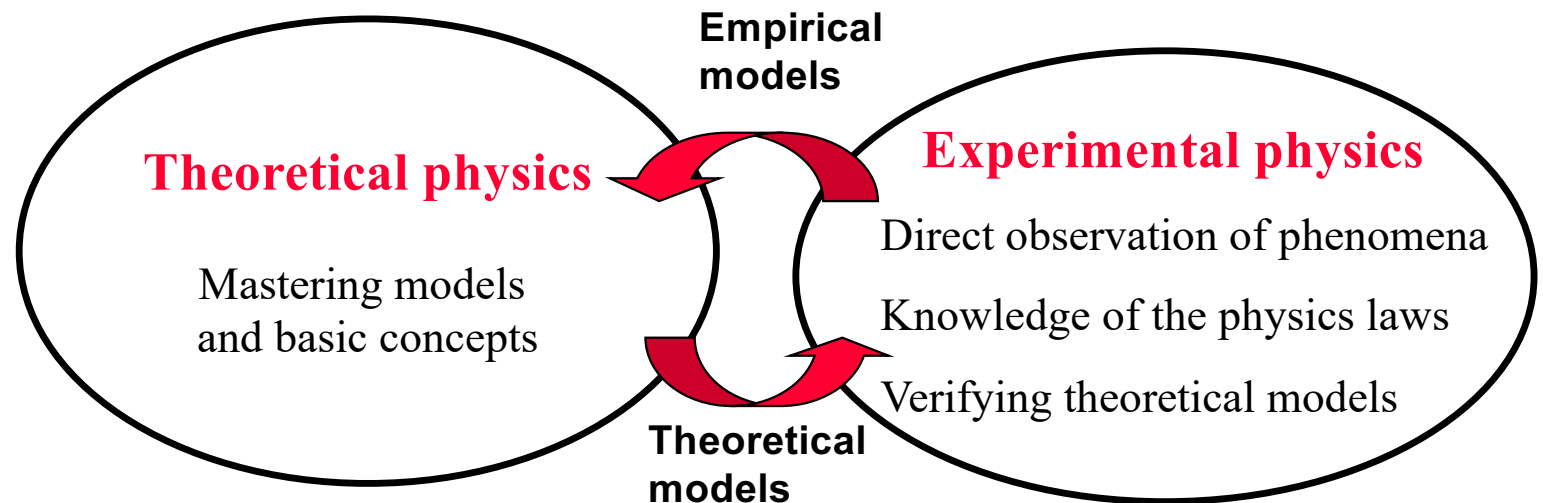
SEANCE D'INTRODUCTION

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Advanced Physics Laboratory

The test of all knowledge is experiment. Experiment is the sole judge of scientific « truth ». But what is the source of knowledge? Where do the laws that are to be tested come from? Experiment, itself, helps to produce these laws, in the sense that it gives us hints.

Richard Feynman



Goals of the Physics Laboratory

- ❖ The art of experimentation
 - using the right equipment, building and repairing
 - data acquisition and analysis
- ❖ Mastering physical concepts
- ❖ Communicating results
 - reports, presentations, posters
- ❖ Developing collaborative skills
- ❖ Developing the sense of initiative and creativity

Organization

- ❖ Teamwork: 2 students by group
- ❖ 3 TPs per semester (4 weeks each)
- ❖ Fridays 8:15-17h
- ❖ 8 hours of laboratory work

Safety

Respect instructions and regulations!

- ❖ Lasers, cryogenic (N_2 liquid), high voltage, radiation...
- ❖ Drinks and food are forbidden in the laboratories

Introductory notes

Introductory notes of TP:

- ❖ Get full information before the beginning of TP
 - > Check the web site: Travaux pratiques de physique 3^{ème} année
<https://www.epfl.ch/schools/sb/sph/physiquetp/tp3/tp3-exp/>
 - > Get in touch with your assistant

Reports

Reports:

- ❖ Reports must be sent to assistants before starting the new TP
and uploaded to Moodle
- ❖ Feedback: ask the assistant about the status of your report and discuss in detail

Reports (10 - 12 pages)

Type:
Scientific
paper

1) **Introduction** (~ 1 page)

Motivation, make the subject of the report clear, state clearly the aims

2) **Theory / Experimental setup** (~ 2 pages)

3) **Results** (~ 5-6 pages)

Present the obtained results as graphs and/or tables. Number and label each figure or table with captions. Include all experimental conditions.

4) **Discussion** (~ 2 pages)

Compare your results with those obtained by other groups **or data already published in literature**

5) **Conclusion** (~1/2 page)

Summing up, convictions of evidence

Evaluation

One grade for each TP: $a + b + c + d$

a) TP preparation (0.5 pt)

- theory, information and data retrieval

b) Laboratory work (2 pt)

- safety, order, punctuality, autonomy, initiative, efficiency

c) Lab notebook (1 pt)

- paper or electronic

d) Report, oral or poster presentation (2.5 p)

Semester grade = $(TP1 + TP2 + TP3) / 3$

Evaluation: reports, presentations

- ❖ structure and length
- ❖ scientific vocabulary
- ❖ clear presentation of the results
- ❖ interpretation and discussion of results
(understanding)

Presentation of the results

Figures and tables

- ❖ Numbering and citing in the text in order
- ❖ Relevant concise captions
- ❖ Axis labels, scaling, font size, symbol size, legend

Units, scientific notation, rounding

Incertitudes

Data and figures from outside sources are referenced

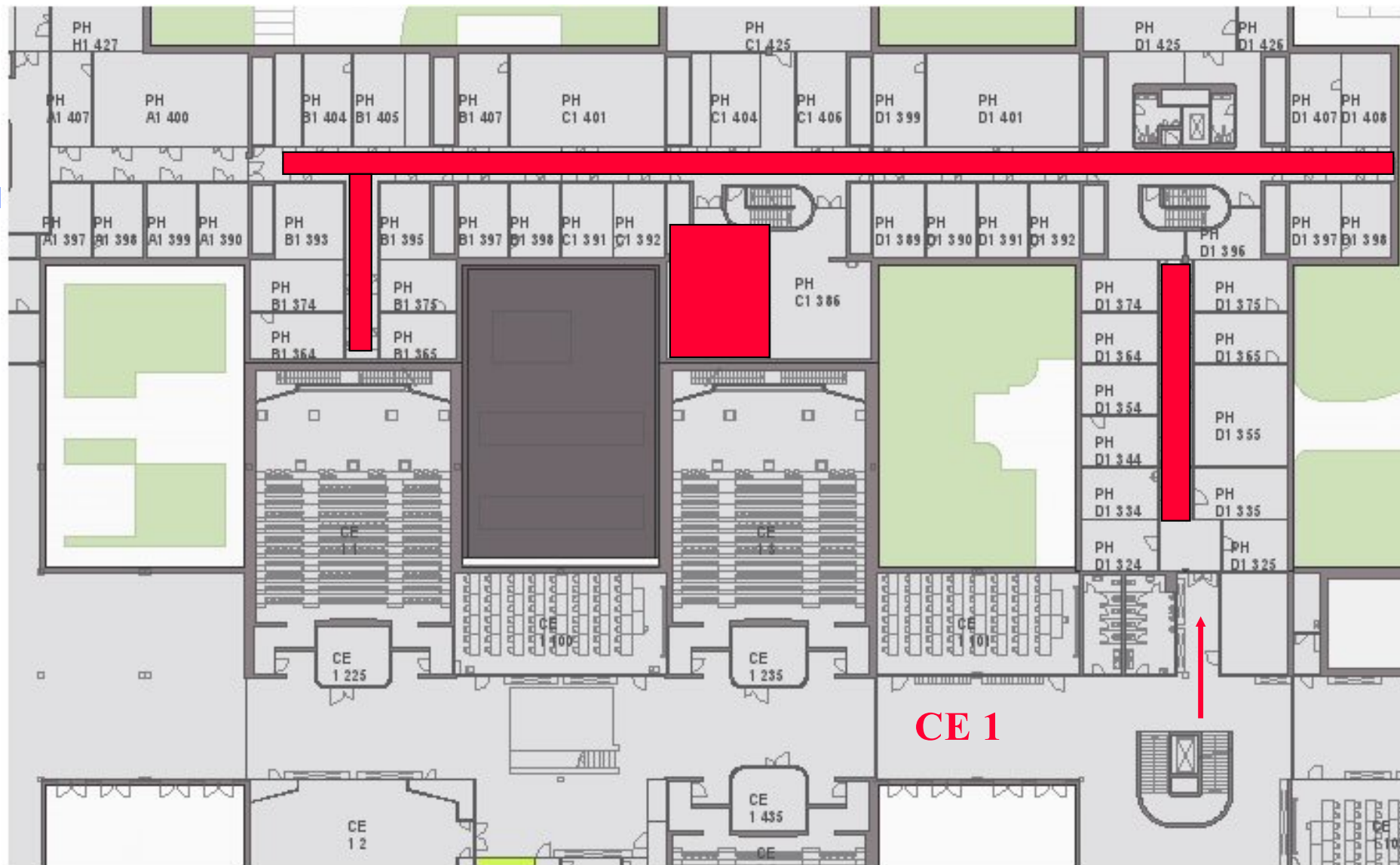
LABORATOIRE DE PHYSIQUE IIIa

SEMESTRE D'AUTOMNE 2024

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ASSISTANTS RESPONSABLES TP3, Automne 2024

	Nom	EXPERIENCE	EXPERIENCE
A	PISANI Federico federico.pisani@epfl.ch	Magnétisme et matériaux magnétiques	Supraconductivité II
B	NICHOLLS Alasdair alasdair.nicholls@epfl.ch	RMN	Résonance de spin électronique (RPE)
C	HAJIGEORGIOU Emily emily.hajigeorgiou@epfl.ch	Physique couches minces	Microscopie à fluorescence
D	PADLEWSKI Mathieu mathieu.padlewski@epfl.ch	Effets Magnéto Optiques	Chaos déterministe
E	LIU Lina lina.liu@epfl.ch	Supraconductivité I	Frottement Intérieur
F	GAAL Benedek benedek.gaal@epfl.ch	Confinement optique I	Confinement optique II
G		Nanoindentation	Métallurgie
H	POLEY SANJUÁN Jesús jesus.poley@epfl.ch	Plasma - I	Plasma - II
I	WU Kexin kexin.wu@epfl.ch	Laser à semi-conducteurs	Laser SC-VCSEL
J	LIU Yong yong.liu@epfl.ch	Spectroscopie Raman	Analyse thermique
K	PAKARI Oskari oskari.pakari@epfl.ch	Flux neutroniques	Spectroscopie γ et n^1_0
L	HAGGER Thomas thomas.hagger@epfl.ch	Milieux granulaires	Physique de bulles
M	spencer.collaviti@epfl.ch jou.chen@epfl.ch yyiyang.ding@epfl.ch zhibin.yang@epfl.ch	Physique nucléaire Exp4, Exp5, Exp6, Exp10	
N	AHN Chulwoo chulwoo.ahn@epfl.ch	Spectroscopie optique I	Photoémission interne
O	GRIGAS Aistis aistis.grigas@epfl.ch	Microscopie à force Atomique (AFM I)	AFM II
P	EICHENBERGER Michael michael.eichenberger@epfl.ch	Interférences Optiques	Effets Quantiques
R	BI Wen Hua David wen.bi@epfl.ch	Rayons X	Analyses par DRX
S	DE ARA GARCIA Tamara tamara.dearagarcia@epfl.ch	Interactions microondes - matière	Para et Ferroélectricité
T			
U	CICCARELLO Francesco francesco.ciccarello@epfl.ch	Intrication quantique	
V	VERDIER Aurélien aurelien.verdier@epfl.ch	Radiotélescope	



Interdisciplinary projects

Daniele Mari

<https://www.epfl.ch/education/educational-initiatives/discovery-learning-program-2/interdisciplinary-projects/>

Tout le semestre de printemps: 8 crédits

Proposition de projet à soumettre au plus tard le 1.12.2024

- Motivation scientifique ou technique
- Descriptif du projet: max 1 page
- Objectifs
- Planning sur le semestre, milestones, répartition individuelle des tâches
- Budget
- Supervisor

Proposition par groupe

Evaluation: 1 rapport technique et 1 exposé oral

International Physicists' Tournament

Daniele Mari

Jean-Marie Fuerbringer

<https://iptnet.info/wp-content/uploads/2023/09/problem-list24.pdf>

Information Literacy

Carmen Cianfrani

Simon Pasquier

Bibliothèque de l'EPFL