

Higgs Hunting 2024

Results and prospects in the electroweak symmetry breaking sector

14TH
HIGGS HUNTING



Gustave Caillebotte "Rue de Paris, temps de pluie (1877)". Art Institute of Chicago

23-25
september

Orsay
Paris

Prelude by the organisers

In memoriam Peter Higgs



Peter Higgs passed away on April 8th 2024. In the 1960s, Peter Higgs, and others, proposed that spontaneous symmetry breaking could provide masses for the mediators of the weak interactions, the W and Z bosons. One major prediction of this idea is the existence of a new particle, now called the Higgs boson, which was finally discovered at CERN in 2012. We now know that the Higgs field is most probably at the origin of the masses of all elementary particles. The three papers written by Peter Higgs between 1964 and 1966 are part of the foundations of the Standard Model and among the most influential ones in particle physics and beyond.

The Higgs Hunting workshop, which owes its name to Peter Higgs, expresses its deepest condolences to his family.

Happy birthday CERN!

*This month marks the **70th anniversary of CERN**, a beacon of scientific discovery and collaboration. We honor CERN's monumental contributions to fundamental physics, especially its pivotal role in the discovery of the Higgs boson, which has deepened our understanding of the universe. **Congratulations to CERN for seven decades of groundbreaking achievements!***



Welcome from the Local Organizing Committee

We are happy to welcome you back in Paris and Orsay for this 14th Higgs Hunting edition!



Organizing Committee

Nicolas Berger (LAPP-Annecy)
Gregorio Bernardi (APC-Paris)
Valérie Brouillard (IJCLab-Orsay)
Matteo Cacciari (LPTHE-Paris)
Luca Cadamuro (IJCLab-Orsay)
Reina Camacho Toro (LPNHE-Paris)
Adinda De Wit (LLR-Palaiseau)
Emanuele Di Marco (INFN Roma)
Emilian Dudas (CPHT-Palaiseau)
Louis Fayard (IJCLab-Orsay)
Pierre Fayet (ENS-Paris)
Paolo Francavilla (INFN and Università di Pisa)
Christophe Grojean (DESY-Hamburg)
Gautier Hamel de Monchenault (IRFU-Saclay)
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Tatsuya Masubuchi (ICEPP-Tokyo)
Giovanni Marchiori (APC-Paris)
Kostas Nikolopoulos (Birmingham)
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Daniela Rebutti (Pavia)
Yves Sirois (LLR-Palaiseau)
Jan Steggemann (EPFL-Lausanne/ETH-Zurich)
Thomas Strebler (CPPM-Marseille)

Poster

Luc Petizon (IJCLab)

Admin. support

Valérie Brouillard (IJCLab)
Émilie Bonnardel (IJCLab)
Vincent Jourdain (IJCLab)
Dominique Longerias (IJCLab)

Techn. support

Grégory Perrin (IJCLab)
Luis Alcobia (Univ. Paris Cité)
Omer Krichen (Univ. Paris Cité)
Marie-Christine Defer (Univ. Paris Cité)

Meeting format

- **Workshop in hybrid format**, benefitting from both in-person discussions and inclusion of remote participants
- **Zoom link available on the agenda** <https://ijclab.zoom.us/j/94890955802>
Password sent privately to participants in handbook
Recordings available shortly after the workshop
- **Discussion format:**
 - Please keep **discussions as organized as possible: wait for the microphones!**
 - Priority given to questions on Zoom
 - Questions can be asked in advance on Mattermost (see next slide), will be brought up during the discussion when relevant
- **Speakers please post your slides by 18:00 the day before your talk** to allow interested participants to prepare for the discussion

Mattermost channels

- **All participants are strongly encouraged to post questions and comments on mattermost to foster interesting and useful exchanges!**
→ Ask early so that mattermost input can be included in the discussions
- **One channel per session**
- **Can be accessed from**
https://mattermost.web.cern.ch/signup_user_complete/?id=9wxha83hcfrn5ysjbyzqddrdse&md=link&sbr=su either with
 - CERN SSO login with CERN account
 - Creating a lightweight account very simply, by following <https://account.cern.ch/account/Externals/RegisterAccount.aspx> (please identify yourself when asking questions on the channels in that case)
- **More details available in handbook**

Higgs Hunting 2024 ▾



☰ Find channel

🌐 Town Square

🌐 Off-Topic

MONDAY

🌐 Theory overview

🌐 General combinations (Mass...

🌐 Higgs Self Coupling

🌐 Historical talks

TUESDAY

🌐 BSM and rare H(125) decays

🌐 Up and down the simulation ...

🌐 Effective Field Theories

🌐 Vision talk

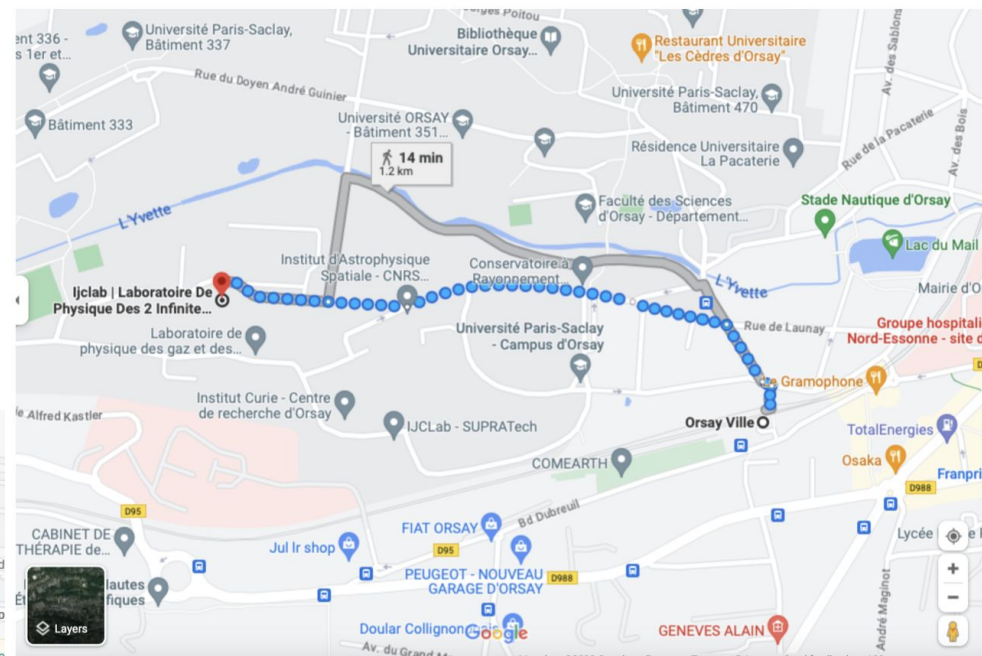
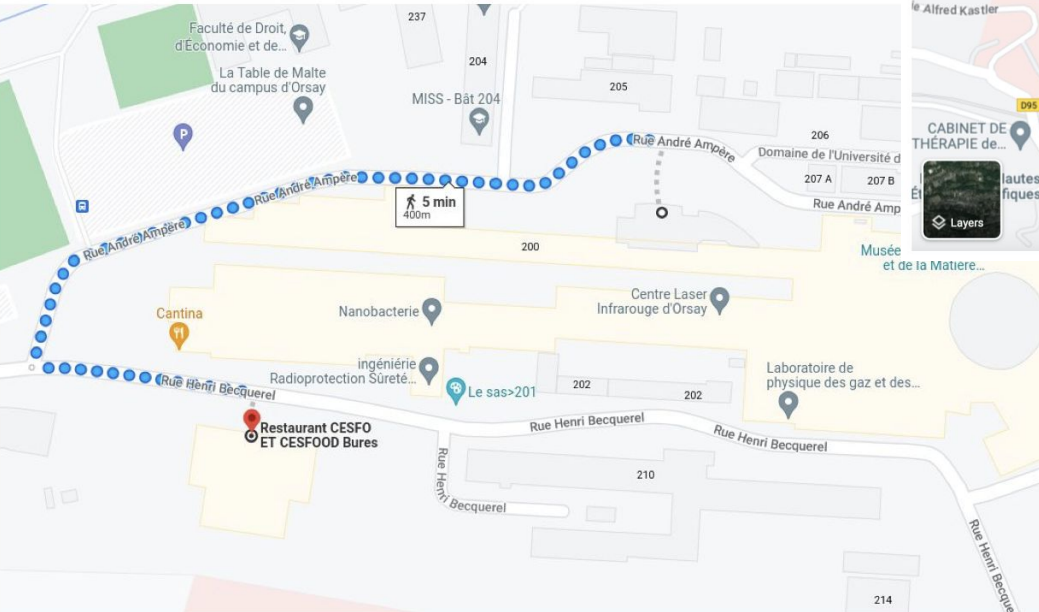
WEDNESDAY

🌐 Higgs physics at HL-LHC

🌐 Concluding talks

Practical information

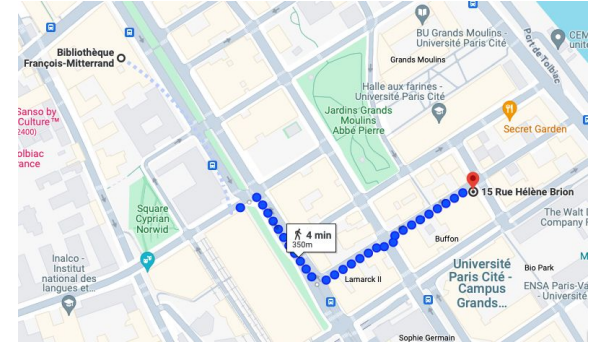
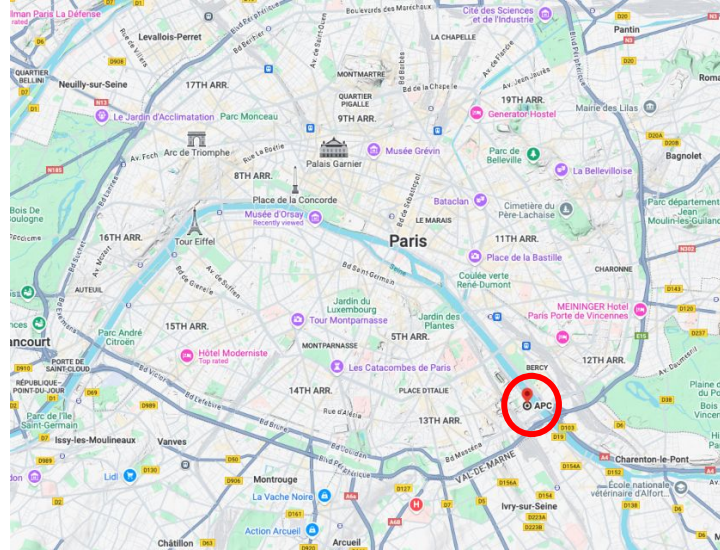
- **Workshop taking place in Orsay on Monday (RER stop Orsay-Ville)**



- **Coffee breaks and welcome drink served just outside the auditorium**
Lunch served at Bures cafeteria
5 min away

Practical information

- **Workshop taking place in Paris on Tuesday / Wednesday (subway stop Bibliothèque François Mitterrand)**
- **Coffee breaks and lunch served close to the auditorium**
- **Conference dinner on Tuesday evening at Dame de Canton, on the Seine, next to the auditorium**

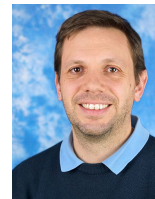


Help with practicalities

- Please don't hesitate to contact us for any issues or questions at any time during the workshop

- For help related to the scientific program, talk uploads, etc. :

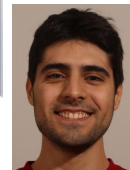
- For other practical issues:



Nicolas Berger nicolas.berger@cern.ch



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Louis Fayard louis.fayard@ijclab.in2p3.fr

Anne-Catherine Le Bihan
anne-catherine.le.bihan@cern.ch



Thomas Strebler thomas.strebler@cern.ch



In Orsay



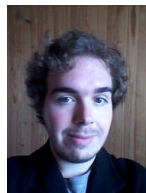
Valérie
BROUILLARD



Emilie
BONNARDEL



Grégory
PERRIN



Vincent
JOURDAIN

In Paris



Gregorio
BERNARDI



Giovanni
MARCHIORI

Higgs Hunting 2025

- Two possible options considered



July

Su	M	Tu	W	Th	F	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

September

Su	M	Tu	W	Th	F	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Higgs Hunting the week after EPS in July 2025 :

- opportunity for participants to attend both events
- different constraints wrt September, different participant profile

Higgs Hunting in September 2025 :

- similar slot to the last years

- If any opinion, don't hesitate to share it with the organising committee in the coming days

Enjoy the conference!

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International Advisory Committee

- E. Aulc (ICLab-Orsay, France)
- U. Bassler (DZFA, France)
- J. Bauer (Fermilab, USA)
- T. Camporesi (CERN, Switzerland)
- M. Carena (Fermilab, USA)
- R. Carlini (Pavia, Italy)
- M. Cepeda (CEEMAT, Spain)
- D. Denner (HLS, USA)
- A. Djouadi (Granada, Spain)
- R.K. Ellis (IPPP-Durham, UK)
- S. Garcon-Schulkin (IP2A-Lyon, France)
- G. Giudice (CERN, Switzerland)
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- A. Stocchi (ICLab-Orsay, France)
- K. Takahashi (KIS, Japan)
- G. Tonelli (Pisa, Italy)
- B. Webber (Cambridge, UK)
- G. Wattana (ICLab-Orsay, France)
- D. Zeppenfeld (Karlsruhe, Germany)



Gustave Caillebotte "Rue de Paris, temps de pluie" (1877) Art Institute of Chicago

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- L'Esca Cadamuro (ICLab-Orsay)
- Walter Caracciolo (IPHE-Paris)
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- Natasia Nikolopoulou (IPHE-Hamburg/LL of Birmingham)
- Enrico Onofri (LAPP-Annoy)
- Daniela Rebuszi (Pavia)
- Fredrik Sjöwall (Potsdam)
- Jan Stanghammer (EUS-Lausanne/ETH-Zurich)
- Thomas Storz (CPH-Maxwell)



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