

Summer School in Neutrino Physics Beyond Standard Model

Eric Baussan & Tamer Tolba

- Strasbourg University and Hamburg University -

29th of June to 11th of July 2025



Université
franco-allemande
Deutsch-Französische
Hochschule



Summer School in Neutrino Physics Beyond Standard Model

Past Summer School :

- 2024** : Radiation Measurement and Radiochemistry in the Environment and Decommissioning (1-5 July 2024)
- 2019** : Soft Matter & Smart Materials (July 1-5, 2019)
- 2017** : Radiochemistry and Nuclear Instrumentation (August 21-25, 2017)
- 2016** : Physics of Living Matter (July 4-8, 2016)
- 2015** : Light! An introduction to modern Physics of Light (July 5-11, 2015)
- 2014** : From the Mystery of Mass to Nobel Prizes (July 6-12, 2014)
- 2013** : Energy on all scales (Aug. 26 – Sep. 05, 2013)
- 2012** : Physics at the nanoscale (July 01 – 07, 2012)
- 2011** : Between two infinities (July 06 – 13, 2011)
- 2010** : Metamaterials (June 27 - July 5, 2010)
- 2009** : The Secrets of the Atomic Nucleus (June 28 - July 4, 2009)
- 2008** : Physics Probes - Interface with Chemistry, Biology and Medicine (June 30 - July 4, 2008)
- 2007** : The Physics of Living Matter (June 24 - 30, 2007)
- 2006** : Particles and the Universe (July 3-12, 2006)
- 2005** : The Challenge of Quantum Mechanics (July 3-10, 2005)
- 2004** : New Trends in Optics (July 4-11, 2004)
- 2003** : Fundamentals of Nanoscience (July 6-13, 2003)
- 2002** : Energy for Europe - Physics of Energy Cycles (7th-14th July 2002)



Summer School 2025
Neutrino Physics Beyond Standard Model
Strasbourg (France) - June 29th – July 11th

Université de Strasbourg
Faculté Physique et Ingénierie
3-5 rue de l'Université
F-67084 Strasbourg Cedex
France

Topics

Atmospheric neutrinos	Neutrino in Standard Model
Absolute neutrino mass	Neutrino Oscillation
CP Violation	Neutrino Long-Baseline physics
Double beta decay	Neutrino-Nucleus cross-section
Geo, reactor and solar neutrinos	Standard Model of Particle Physics
Neutrino Astrophysics	Sterile neutrinos

Lecturers

ATHAYADE Joao Pedro, Institut Pluridisciplinaire Hubert Curien, Strasbourg
BUIZZA AVANZINI Margherita, Laboratoire Leprince Ringuet, Paris
GASTALDO Loredana, Kirchhoff-Institut für Physik, Heidelberg
HAGNER Caren, Hamburg Universität
KRAJEWSKI Thomas (Centre de Physique des Particules de Marseille, Marseille)
LASSERRE Thierry, Kirchhoff-Institut für Physik, Heidelberg
LAVIGNAC Stéphane, Institut de physique théorique (CEA Saclay), Université Paris-Saclay
LOKHOV Aleksei, Karlsruhe Institute of Technology German, Karlsruhe
LUDHOVA Livia, Jülich Forschungszentrum German, Jülich
NOWACKI Frédéric, Institut Pluridisciplinaire Hubert Curien, Strasbourg
PERRIN-TERRIN Mathieu, Centre de Physique des Particules de Marseille, Marseille
PRADIER Thierry, Institut Pluridisciplinaire Hubert Curien, Strasbourg
SCHLÖSSER Magnus, Karlsruhe Institute of Technology German, Karlsruhe
TOLBA Tamer, Hamburg Universität, Hamburg
WEINHEIMER Christian, Universität München

Organisation :
Eric Baussan (Strasbourg University)
Tamer Tolba (Hamburg University)

Contact : phi-ess2025@unistra.fr

Faculté de physique et ingénierie Université de Strasbourg Universität Hamburg Université franco-allemande Deutsch-Französische Hochschule Logo of the European Union KIT Karlsruhe Institute of Technology IPHC Institut de Physique de Haute Normandie CNRS NUCLEAIRE & PARTICULES euro The European Group Grand Est Strasbourg.eu

Summer School in Neutrino Physics Beyond Standard Model

Topics of the School:

- Standard Model of Particle Physics
- Atmospheric neutrinos
- Absolute neutrino mass
- CP Violation
- Double beta decay
- Geo, reactor and solar neutrinos
- Neutrino Astrophysics
- Neutrino in Standard Model
- Neutrino Oscillation
- Neutrino-Nucleus cross-section measurements
- Sterile neutrinos

Website : <https://indico.in2p3.fr/event/35532/>



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PERRIN-TERRIN Mathieu, Centre de Physique des Particules de Marseille, Marseille
PRADIER Thierry, Institut Pluridisciplinaire Hubert Curien, Strasbourg
SCHLÖSSER Magnus, Karlsruhe Institute of Technology German, Karlsruhe
TOLBA Tamer, Hamburg Universität, Hamburg
WEINHEIMER Christian, Universität München

Organisation :
Eric Baussan (Strasbourg University)
Tamer Tolba (Hamburg University)

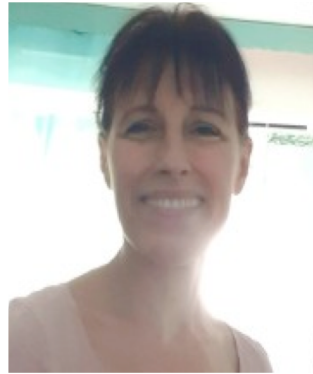
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Summer School in Neutrino Physics Beyond Standard Model



Eric Baussan
(Organizer)



Odile Moser
(Administration)



Tamer Tolba
(Organizer)



Alain Krebs
(Administration)



Florent Rosier
(Administration)



Cynthia Steffen
(Communication)

Summer School in Neutrino Physics Beyond Standard Model



Faculty of Physics and Engineering – 3 rue de l'Université

- Amphitheatre Fresnel on Monday
- Amphitheatre Carnot for all the lectures (2nd Floor)



IPHC/CNRS – 23 rue de Loess - Strasbourg

Only for practical Work 9th-10th of July inside Team

=> Bus G from the Train Station to Arago (CTS Tickets)

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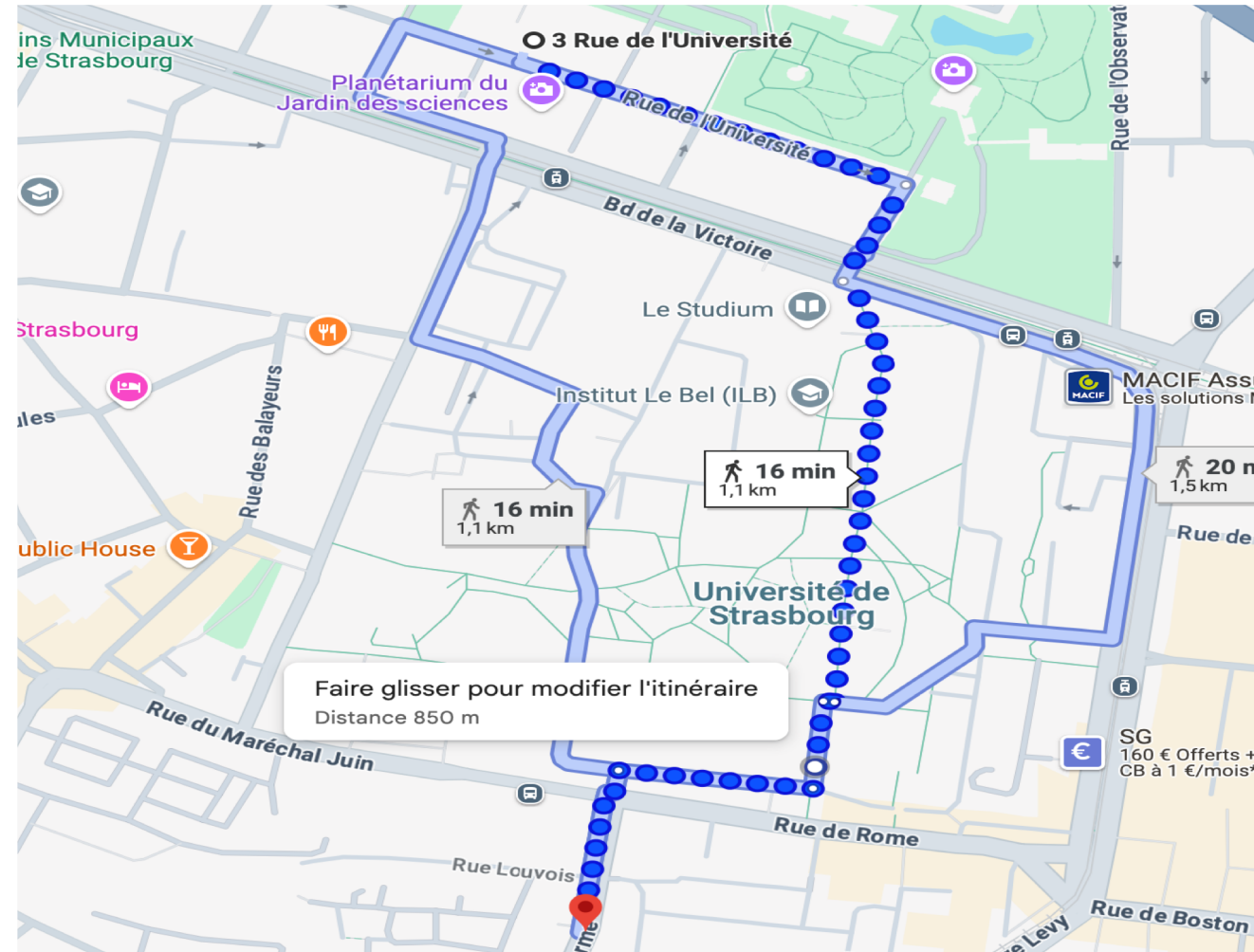
Summer School in Neutrino Physics Beyond Standard Model

Accommodations

Cité U Paul Appell
8 rue de Palerme
67000 Strasbourg



- Breakfast at 7h45 at the restaurant near the residence



How to go to the Cité U Paul Appell ?

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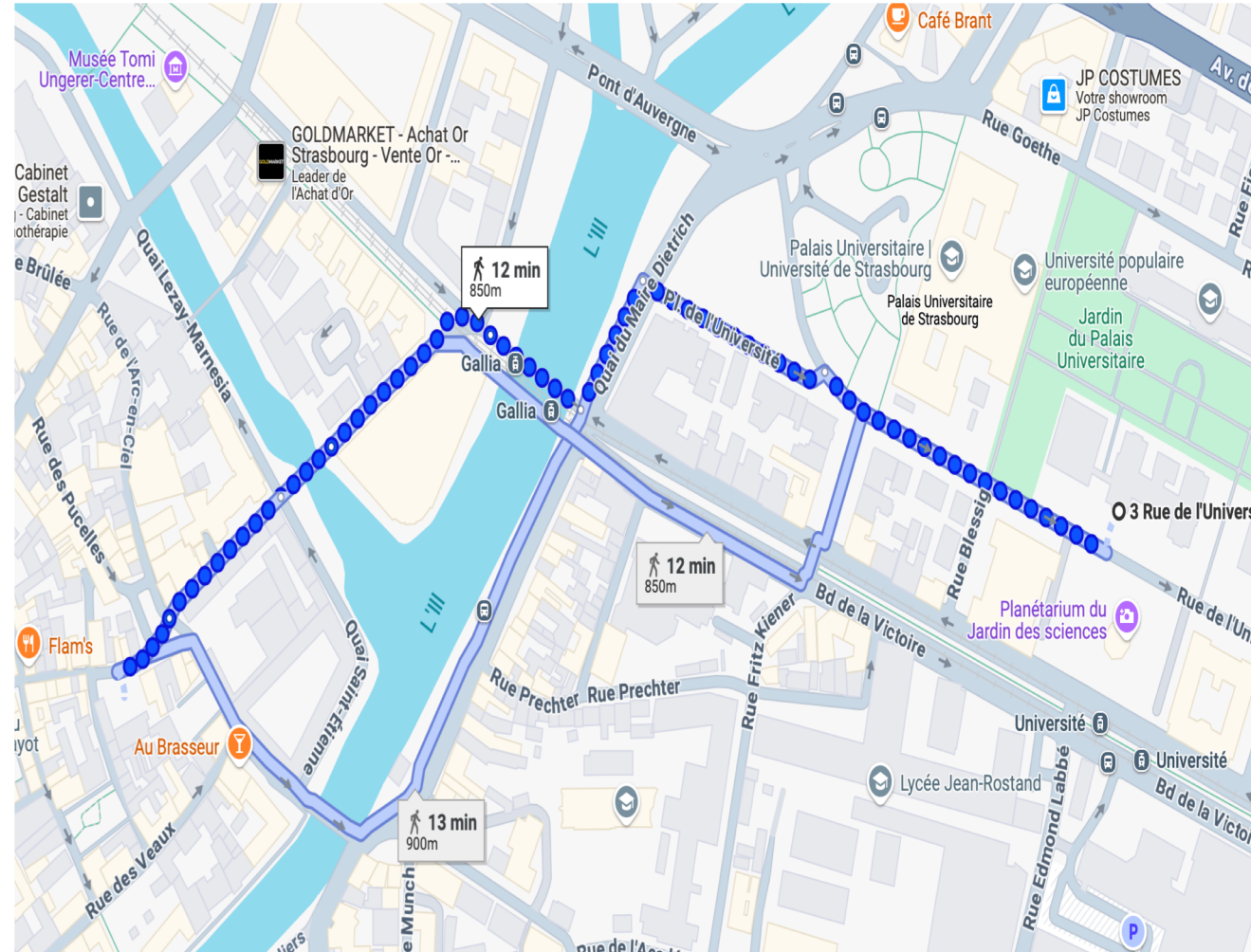
Accommodations

FEC Strasbourg

17 place Saint-Etienne,
67000 Strasbourg



- FEC Restaurant available on site



How to go to the FEC ?

Summer School in Neutrino Physics Beyond Standard Model

“Restaurant le 32” - 32 Boulevard de la Victoire 67000 Strasbourg



- Lunch from 12h45 to 13h45
- Please Check with the organisation « **dietary request** »

Website : <https://www.crous-strasbourg.fr/restaurant/le-32-2/>



How to go to the restaurant ?

Summer School in Neutrino Physics Beyond Standard Model

	Sunday 29/06	Monday 30 June	Tuesday 01/07	Wednesday 02/07	Thursday 03/07	Friday 04/07	Saturday 05/07	Sunday 06/07	Monday 07/07	Tuesday 08/07	Wednesday 09/07	Thursday 10/07	Friday 11/07
9h			Standard Model	Standard Model	Standard Model	Double Beta Decay	Social Day	Free Time	Neutrino Astrophysics	KIT Day	Research project explanation		Research project Presentation
9h30		Registration	coffee break	coffee break	coffee break	coffee break			coffee break		coffee break	Research project	coffee break
10h			Neutrino Oscillation Review	Flavor Mixing And CP Violation	Flavor Mixing And CP Violation	Sterile Neutrino			Atmospheric Neutrino		Visit CMOS Plateform (IPHC)		Research project Presentation
10h30													
11h		lunch	lunch	lunch	lunch	lunch			lunch		lunch	lunch	lunch
11h30													
12h	Student Reception	Opening Session	Standard Model	Monitored/Tagged Beam	European Parliament Visit	Solar/Geo Neutrino	Social Day	Free Time	Ansolute Neutrino Mass	KIT Day			Closing Session and Departure
12h30		Hamburg University	coffee break	coffee break		coffee break			coffee break				
13h		Strasbourg Univesity Research Programs	Poster	Neutrino In Standard Model		Reactor Neutrino			Neutrino Cross-section		Research project	Research project	
13h30		Welcome Cocktail	Poster	Poster		Poster			Poster				
14h					Strasbourg City BoatTour								
14h30					Winstub dinner								
15h													
15h30													
16h													
16h30													
17h													
17h30													
18h													
18h30													
19h													
19h30													
20h													

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List of Posters

Poster ID	Poster Title	Authors
1	Calculation of LO and NLO form factors through HQET factorization in Semi Leptonic W decay	Sajawal Zafar
2	The tension between NOvA and T2K results about the best fit value of Delta CP under the light of LIV Parameters"	Sankhadeep Das
3	A Low-Energy Muon Storage Ring for Neutrino Cross-Section and Sterile Neutrino Measurements	Ting Wing CHOI
4	Search for High-Energy Neutrinos with SND@LHC	Ivaylo Dionisov
5	Very Late Afterpulses and Search for the Neutron Echo in IceCube	Kaustav Dutta
6	Sensitivity of Hyper-Kamiokande to Neutrino Oscillation Parameters Using Accelerator Neutrinos	Assia El Kaftaoui
7	Studies on general neutrino interactions with the KATRIN experiment	Hanna Sofia Henke
8	Modelling of a Low Energy Neutrino Experiment	Ioannis Karakoulias
9	<i>Kinematic reconstruction of neutrinos in $\pi \rightarrow \mu + \nu$ decays for Neutrino Tagging applications</i>	Lucie Petit
10	Optimizing Recoil Imaging Detectors	Chiara Lisotti
11	Probing New Physics with JUNO	Andreas Lund
12	Performance study of the upgraded near detector of the T2K experiment	Jean-Baptiste Plançon
13	HyperKamiokande : The new generation Water Cherenkov Detector	Lorenzo Restrepo
14	Katrin : Current Status of neutrino mass	Jan Plössner

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Research Projects (at IPHC Laboratory the 9th to 10th France)

1. Rutherford/Mott cross sections at the 4 MV Accelerator
2. SITRINEO
3. Characteristics comparison of different photodetectors
4. HPGE Gamma Spectrometer Simulation
5. Muon Telescope
6. Muon Lifetime
7. Calibration of a photomultiplier response

Some experimental works are proposed to groups of 4-5 students to be prepare inside a team. Prepare a 10 minute with group members. Select one or two representatives from your group to present on Friday 11th morning.

=> To be chosen by Monday 7th of July.

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SOCIAL PROGRAM

- THURSDAY JULY 3TH -
14H30 – 17H05

Visit Strasbourg *European Parliament Visit*

@ EUROPEAN PARLIAMENT
1 ALL. DU PRINTEMPS, 67000 STRASBOURG

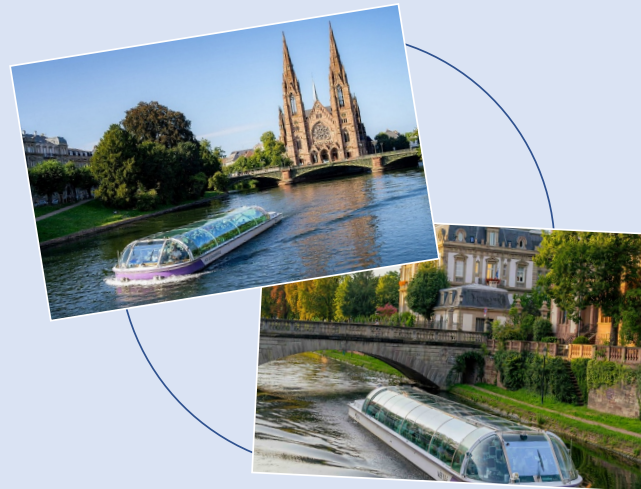


SOCIAL PROGRAM

- THURSDAY JULY 3TH -
18H15 – 19H30

Visit Strasbourg *Boat Tour*

@ BATORAMA
67000 STRASBOURG



SOCIAL PROGRAM

- THURSDAY JULY 3TH -
20H00 – 22H00

Evening entertainment *Tartes flambées*

@ ANCIENNE DOUANE RESTAURANT
6 RUE DE LA DOUANE, 67000 STRASBOURG



Summer School in Neutrino Physics Beyond Standard Model

Saturday the 5th of July

8:30 – 09:30

🚌 BUS TRANSPORTATION: STRASBOURG → HAUT-KOENIGSBOURG CASTLE

09:30 – 11:30

🏰 VISIT: @ HAUT-KOENIGSBOURG CASTLE

11:30 – 12:30

🚌 BUS TRANSPORTATION: HAUT-KOENIGSBOURG CASTLE → COLMAR

12:30 – 13:30

LUNCH: PICNIC IN COLMAR

13:30 – 17:00

🚶 FREE TIME VISIT: @ COLMAR

17:00 – 17:40

🚌 BUS TRANSPORTATION: COLMAR → OBERNAI

17:40 – 19:30

🚶 FREE TIME VISIT: @ OBERNAI

19:30 – 21:30

🍴 DINNER AT THE RESTAURANT: LA HALLE AUX BLÉS

21:30 – 22:00

🚌 BUS TRANSPORTATION: OBERNAI → STRASBOURG



Welcome to all participants
and
We wish you a good Summer School