

Closing session of the JUAS-2023 Course 1

E. Métral (CERN): JUAS director

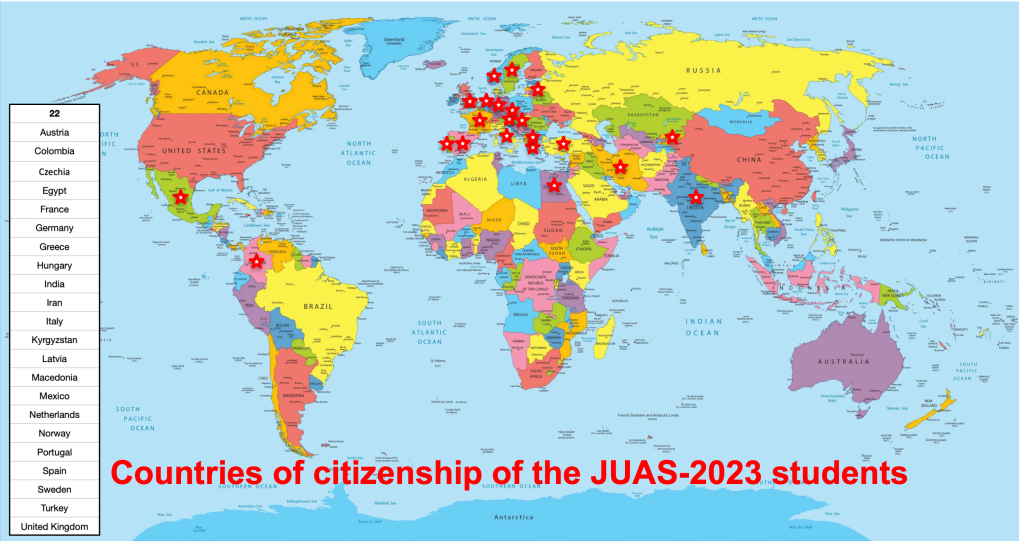
Closing session of the JUAS-2023 Course 1

E. Métral (CERN): JUAS director

- ◆ Few slides from Stéphanie
- ◆ Few slides from me: past, present, future
- ◆ 2 evaluation forms from Stéphanie => To be filled
- ◆ Final discussion (everybody) if needed ;-)

Welcome to JUAS-2023!

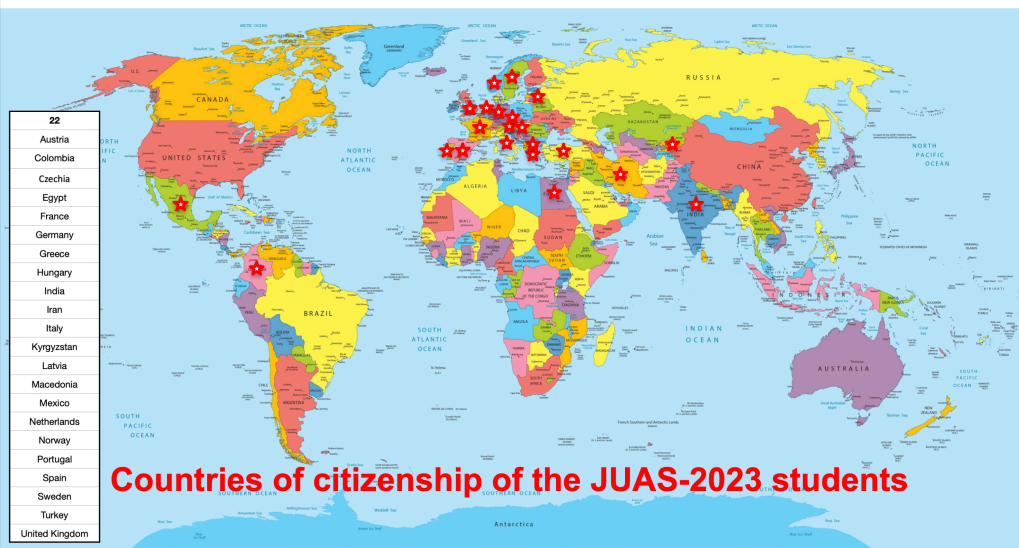
E. Métral (CERN, elias.metal@cern.ch): JUAS director



Countries of citizenship of the JUAS-2023 students

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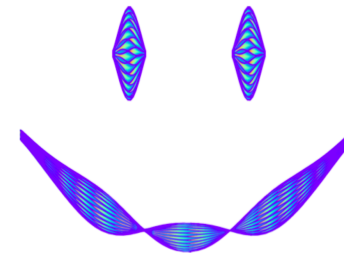
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Countries of citizenship of the JUAS-2023 students

Welcome to JUAS-2023 and enjoy!

=> We hope that you will have a rewarding experience and get a good start in learning the fascinating physics of particle accelerators



**We have been really very happy
to have the JUAS back in person
after 2 years of Zoom
(in 2021 and 2022)!**

Slide I discussed with the JUAS lecturers in September 2021 to prepare JUAS-2022

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→ Only 2 things missed to the JUAS-2021 edition

- In-person relations between the students
- In-person relations between the lecturers and the students

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Slide I discussed with the JUAS lecturers in September 2021 to prepare JUAS-2022

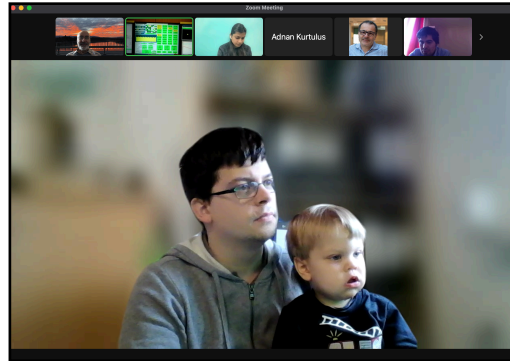
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- ➔ Keeping JUAS' spirit without students in Archamps has been a great challenge, requiring a huge preparatory work for the ESI and JUAS teams, for all the lecturers who had to adapt their lectures, tutorials and exams, all the people organising the visits, the workshops, the practical days, etc.

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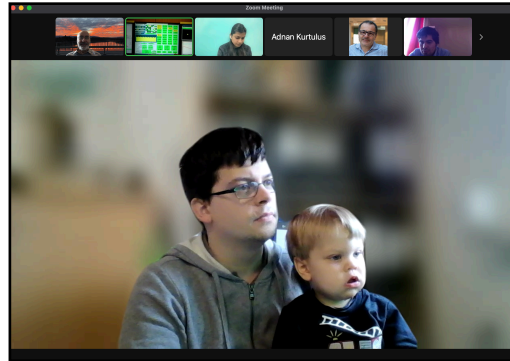
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- I have been really very impressed by the commitment of all the people involved, despite all the difficulties encountered: many many thanks to all!

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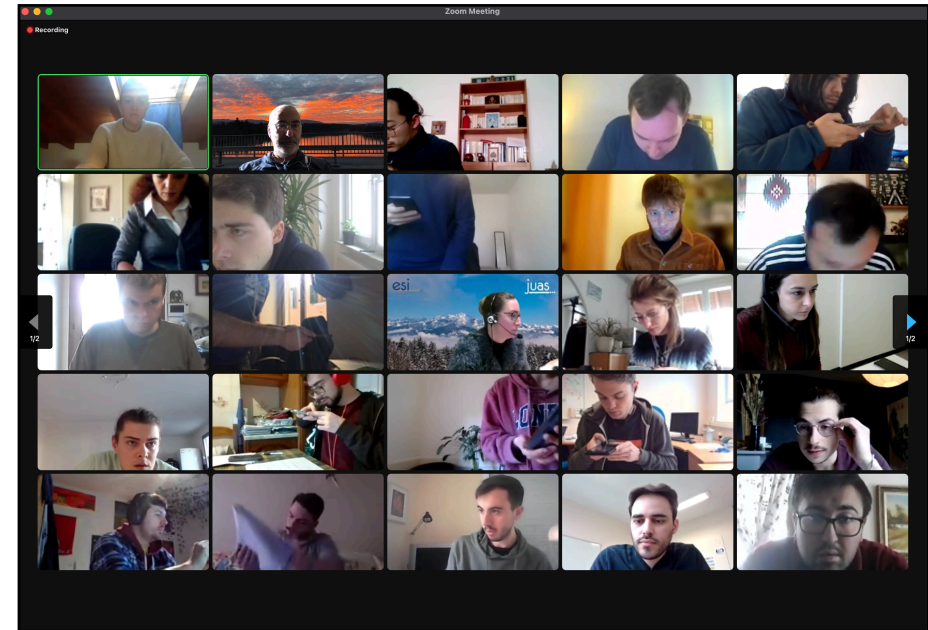
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to see the next next generation of
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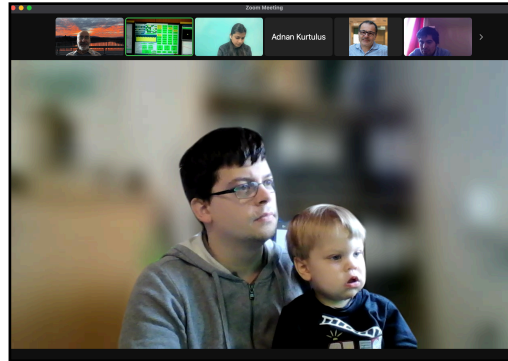


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... and do the exams on exam.net...

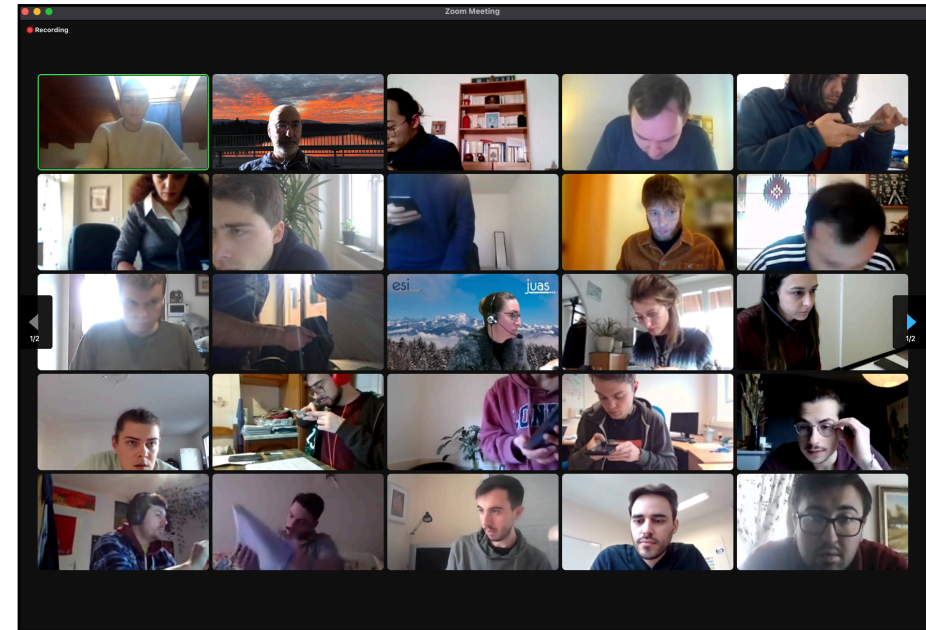


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=> We tried to adapt as much as possible to the remote format!

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after 2 years of Zoom
(in 2021 and 2022)!**

JUAS-2023: scientific programme

Course 1: 110h05min

Lectures

Topics	Nbr of hour(s)
Reminder on Special relativity & Electromagnetism	1h15
Transverse Beam Dynamics	11h40
Longitudinal Beam Dynamics	11h40
MADX	50 min
PyHeadTail	50 min
Linacs	6h40
Transverse Linear Imperfections	6h40
Cyclotrons & FFAs	5h00
Synchrotron Radiation	10h00
Transverse non-linear effects	4h10
Injection / Extraction	2h30
Accelerator Design	4h10
Collective effects (Space charge and instabilities)	10h00
TOTAL	75h25

Visits

Topics	Nbr of hour(s)
CERN LEIR Accelerator	1h00
ALICE Experiment at the CERN LHC	2h00
ESRF	3h00
TOTAL	6h00

Workshops

Topics	Nbr of hour(s)
MADX	5h00
PyHeadTail	2h30
Accelerator Design	9h10
TOTAL	16h40

Seminars

Topics	Nbr of hour(s)
Particle Accelerators in the 21st century	50 min
Introduction to CERN & its Accelerator Complex	50 min
Introduction on colliders session	50 min
Collider's session	4h30
Transverse non-linear manipulations	50 min
Free-Electron Lasers	50 min
Beam-based impedance measurements	50 min
Novel High Gradient Particle Accelerators	50 min
CERN LIU Project: Beam Dynamics aspects & solutions	50 min
I-FAST-CBI: Challenge based innovation for particle accelerators & related technologies	50 min
TOTAL	12h00

WRITTEN Examination

5 topics, each allocated one and a half hours (1h30):

- **Exam 1: Transverse beam dynamics** (coefficient 14): Monday 23 January
- **Exam 2: Longitudinal beam dynamics** (coefficient 14): Monday 23 January
- **Exam 3: Synchrotron radiation** (coefficient 12): Tuesday 7 February
- **Exams 4 & 5: Transverse Linear Imperfections** (coefficient 8) + **Collective effects** (coefficient 12) : Wednesday 8 February

ORAL Examination

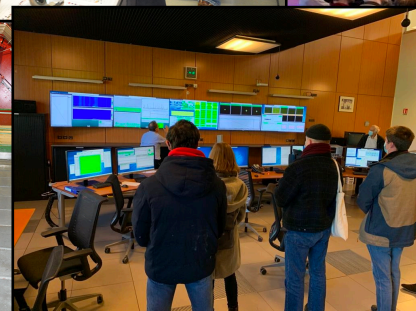
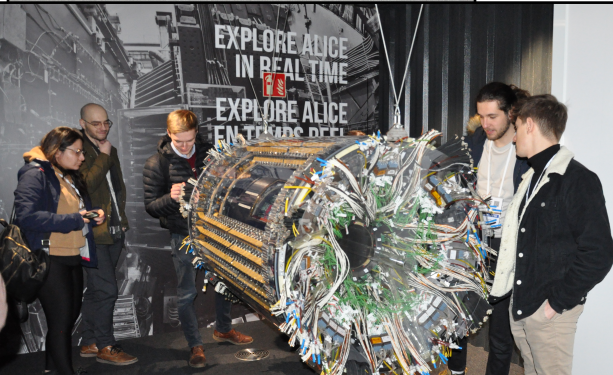
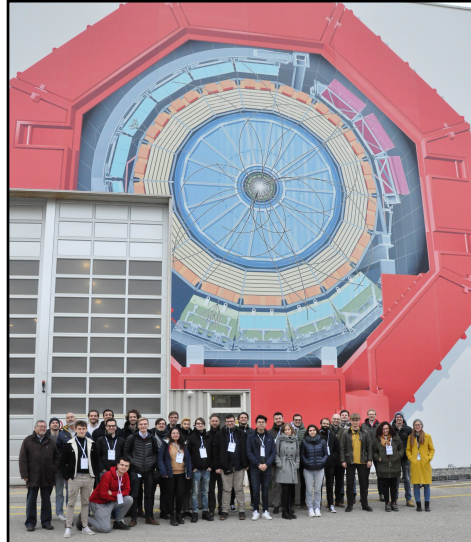
For the **Accelerator design workshop** (coefficient 6): Monday 6 February

Note: there will be a bonus for those who will hand back a well filled notebook after the MADX Workshop

Lectures, tutorials and seminars



Visits



Diner at CERN



Oral presentations for the Accelerator Design Workshop



Written exams



Accommodation at La Colombière

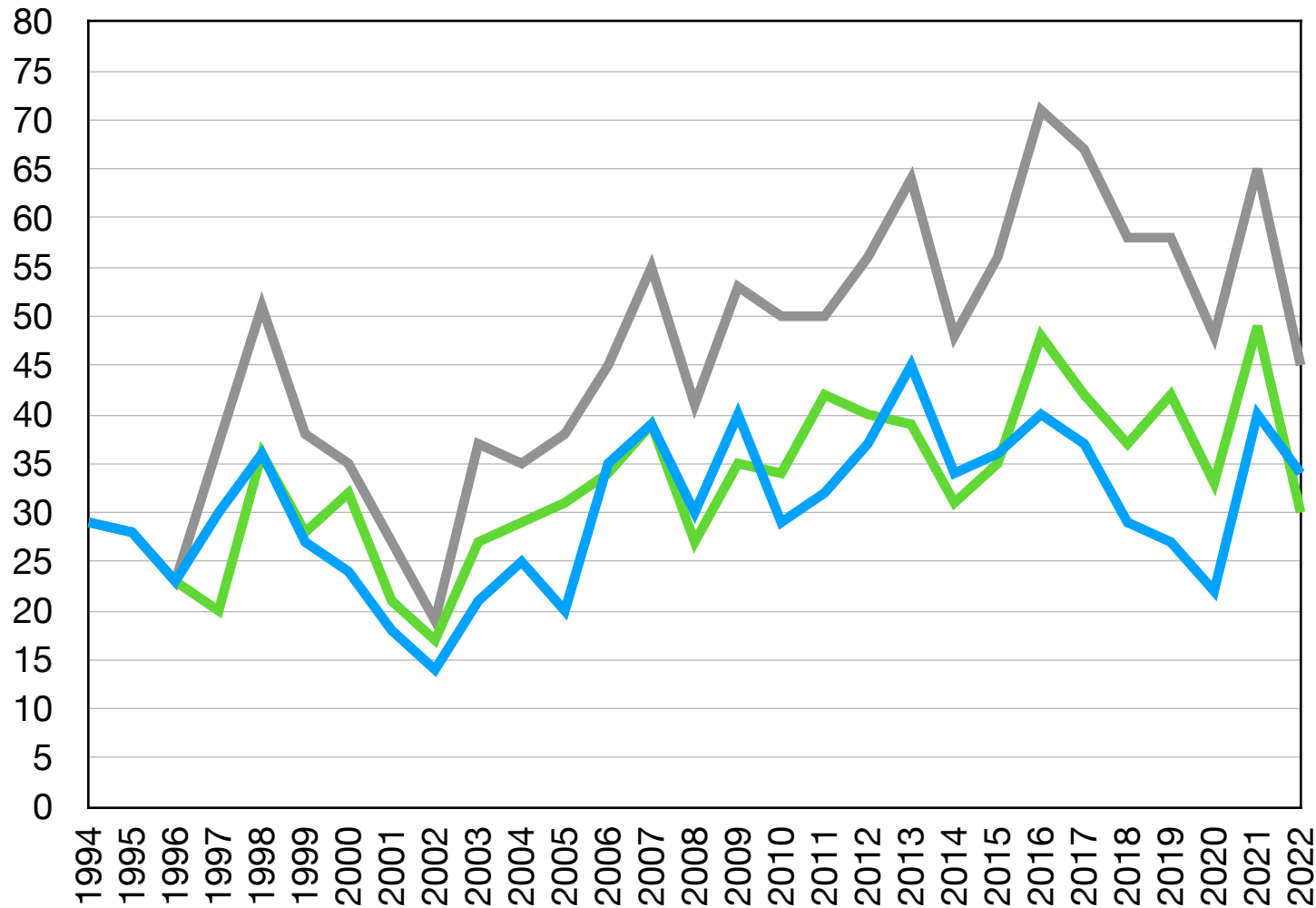


Some time to relax



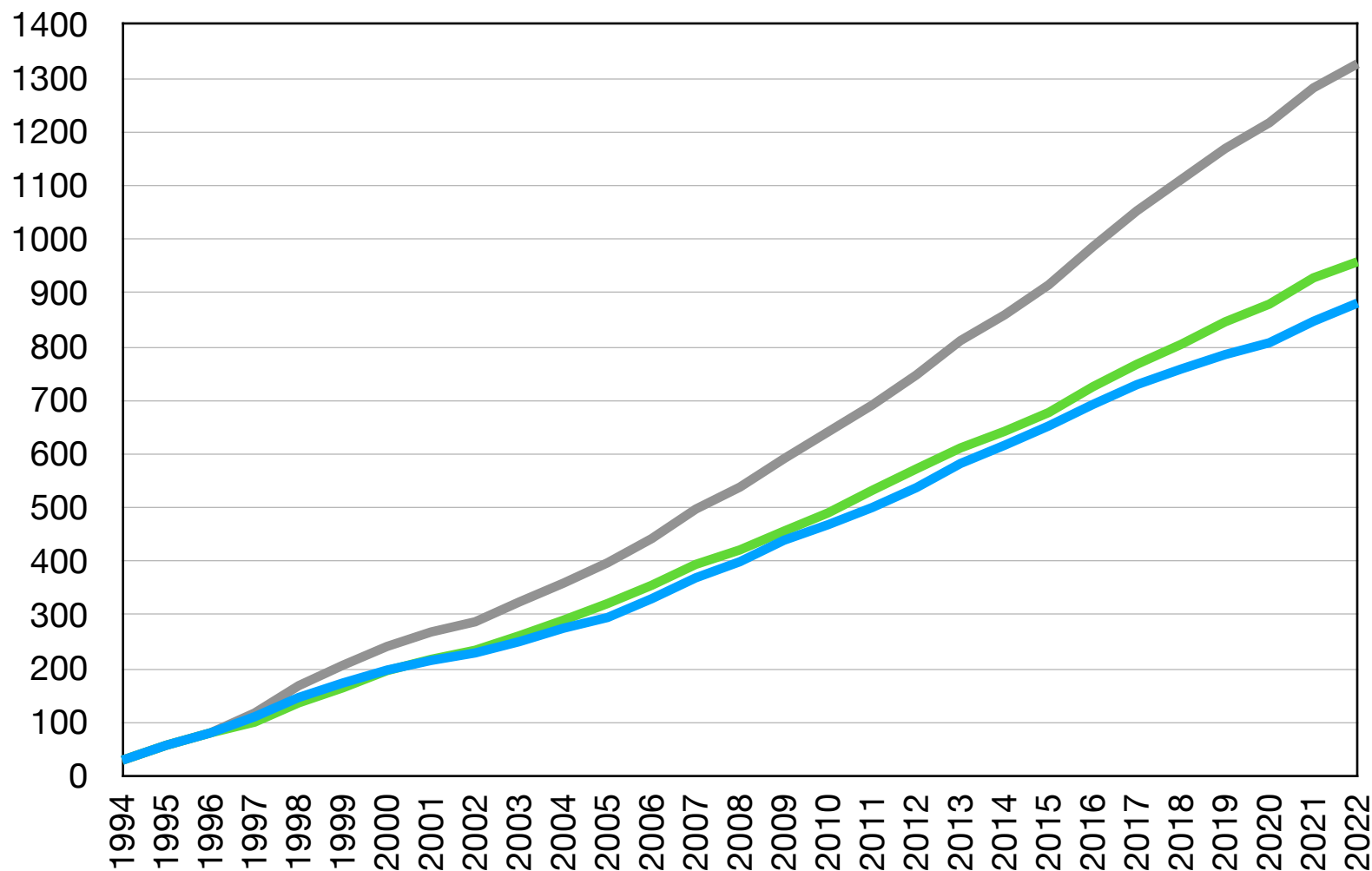
You are now part of the JUAS family

— Course 1 — Course 2 — All registered students



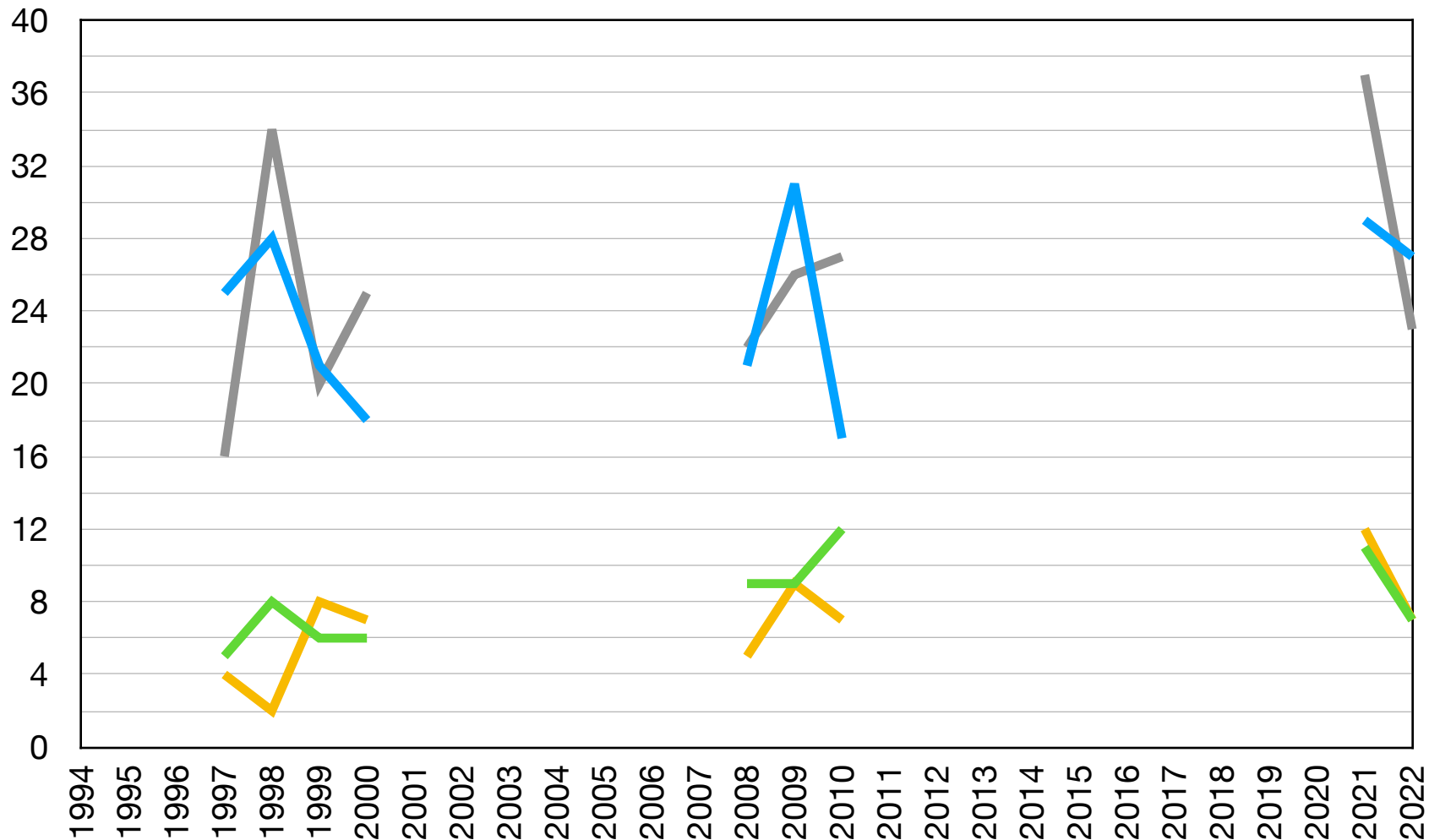
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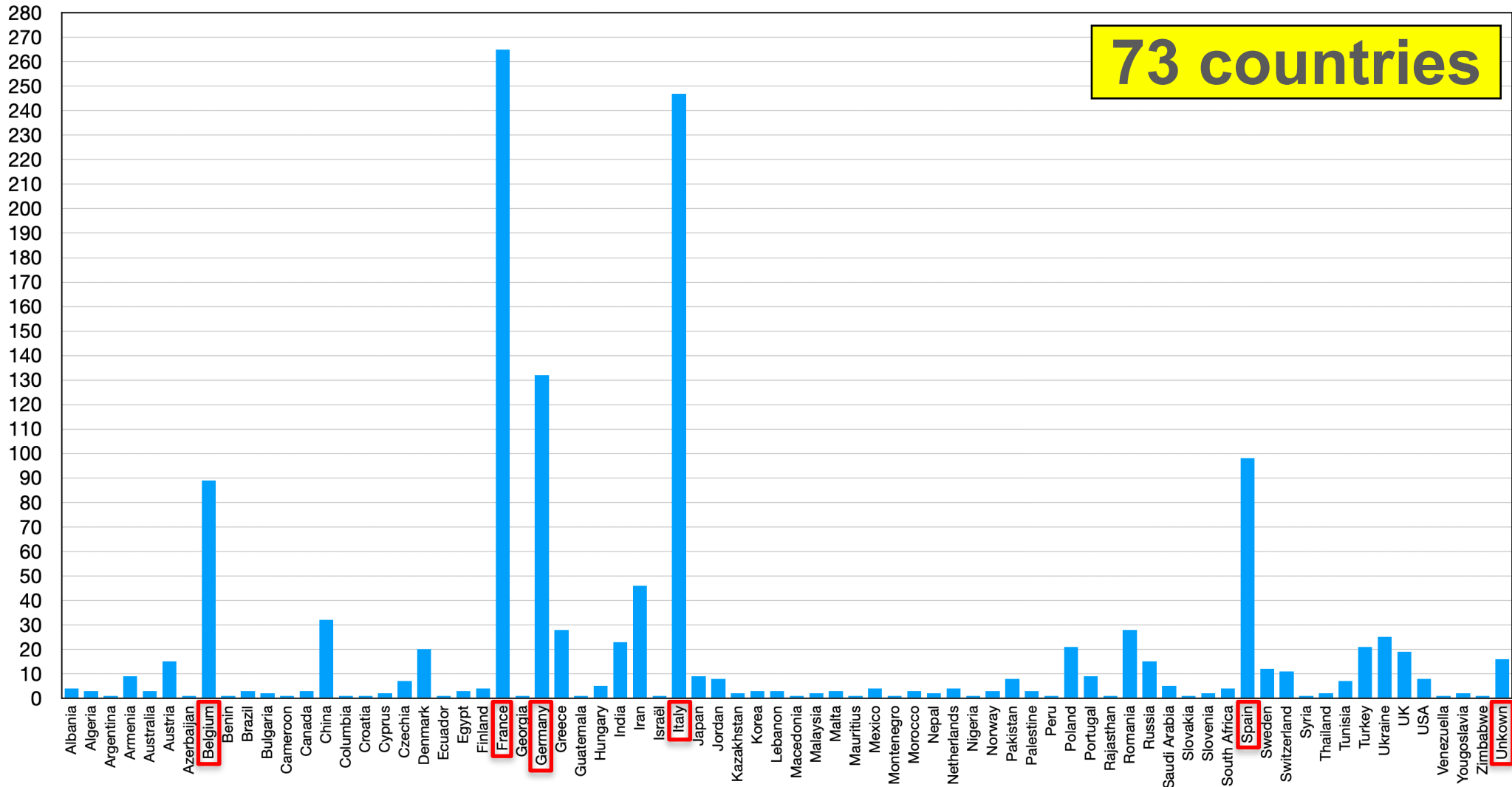
Male C1 Female C1 Male C2 Female C2



You are now part of the JUAS family

■ Number of people trained at JUAS by country of citizenship

73 countries



CERN Yellow Reports: School Proceedings

CERN-2024-XXX

Proceedings of the Joint Universities Accelerator School (JUAS)

Courses and exercises

Editorial committee:

Elias Métral (Chair), Frédéric Bordry, Marco Bozzo, Phil Burrows,
Joachim Enders, Angeles Faus-Golfe, Terry Garvey, Sophie Kazamias,
Yuri Kubyshin, Philippe Lebrun, Joël Le Duff, François Méot, Luigi Palumbo,
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Ursula Van Rienen, Jens Vigen, Carsten Welsch

Reminders for Jens:

No pending issues for now



JUAS-2024 book

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Being written

- I) History of JUAS
- II) A century of particle accelerators
- III) The science of particle accelerators (JUAS Course 1)
- IV) The technology and applications of particle accelerators (JUAS Course 2)

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Publication date

15 November 2024

Fyi: as far as I am concerned, I will have another 3 important steps linked to JUAS-2023 Course 1

- ◆ Contact the best student of the JUAS-2023 Course 1 as soon as I receive the results of all the exams



We are delighted to inform applicants to JUAS 23 of the **JUAS-IPAC Prize 2023**, awarded by the IPAC Committee, in charge of organising IPAC 23, the International Particle Accelerator Conference, to be held in **Venice (Italy)** on **7 - 12 May 2023**.

The Prize will take the form of a cash grant covering registration, travel, hotel and subsistence costs at IPAC 23.

The Prize will be awarded to one student attending Course 1 – Science of Particle Accelerators. He/she will be selected by the JUAS Director and recommended to the IPAC Committee according to the following criteria:

- enrolled in a Master or PhD programme
- obtaining the highest overall mark in the Course 1 examinations
- committed to pursuing his/her career in the field of particle accelerators
- willing to present his/her work (Master's thesis, doctoral research) at the Conference
- willing to assist the Conference organisers (e.g. acting as scientific secretary of a session)
- willing to promote JUAS on the stand devoted to particle accelerator schools

More information about the IPAC conference available [HERE](https://www.ipac23.org/). <https://www.ipac23.org/>

- ◆ Send you all your certificates (with your marks when applicable)
- ◆ Inform the JUAS Advisory Board (during our next meeting on 17-18/04/2023) about the JUAS-2023 Course 1 and **all your feedbacks**

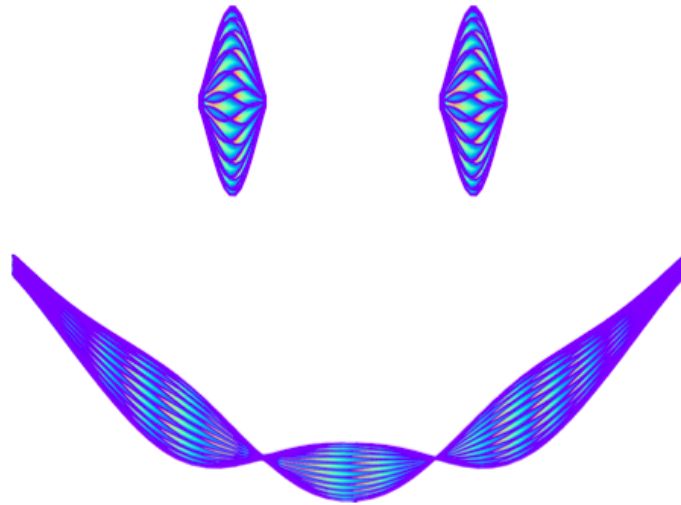
JUAS-2023 Course 1 is over: enjoy!

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had

got


=> We hope that you ~~will have~~ a rewarding experience and ~~get~~ a good start in learning the fascinating physics of particle accelerators



12:00 → 12:30 **EVALUATION FORM - Week #5**

🕒 30m 

Please fill in the evaluation form of the week

 Evaluation form - W...

12:00 → 12:30 **GLOBAL evaluation form of Course 1**

🕒 30m 

 GLOBAL EVAL Cour...

12:30 → 14:00

Goodbye lunch (provided by ESI)

🕒 1h 30m