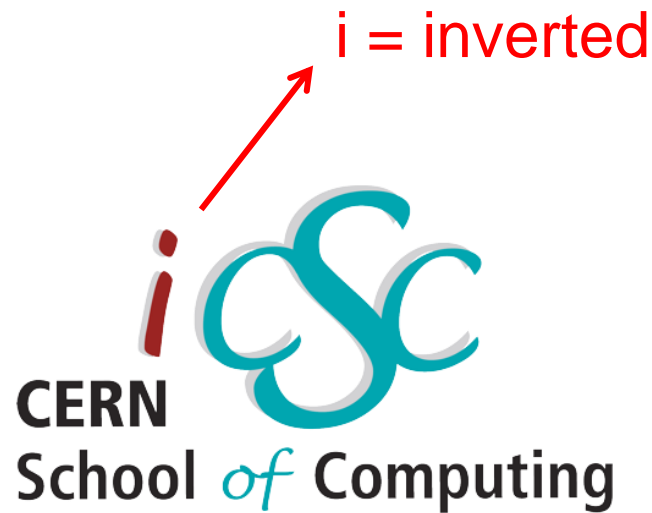


# Welcome ...



14<sup>th</sup> Inverted CERN School of Computing, 6 – 9 March 2023, CERN, Geneva, Switzerland

Alberto Pace, [alberto.pace@cern.ch](mailto:alberto.pace@cern.ch), school director



*"Where students turn into teachers"*

Involving former CSC participants to  
deliver advanced education

# Finally, the iCSC is back face to face !



## iCSC 2023

Inverted School 14th edition will take place  
at CERN and online, from 6 to 9 March 2023  
– Registrations are closed now.

2020 Postponed



## tCSC 2023

Thematic School 12th edition, will take  
place at MedILS, Split, Croatia from 11 to 17  
June 2023 – **Applications are open now!**

2020 Online only



## CSC 2023

Main School 44th edition will take place in  
Tartu, Estonia, from 20 August to 2  
September 2023 – **More information  
coming soon.**

2021 Canceled  
(no main school)

2023 Face to face !  
(and remote 😊)

# The CERN School of Computing

- **Aims at creating a common culture in scientific computing among young scientists and engineers involved in particle physics or other sciences, as a strategic direction to favor mobility and to facilitate the development of large computing-oriented transnational projects.**
  - <http://cern.ch/csc>
- **Participants come from worldwide laboratories and universities with typically of 15 to 30 different nationalities (60 different nationalities over the past 10 years).**
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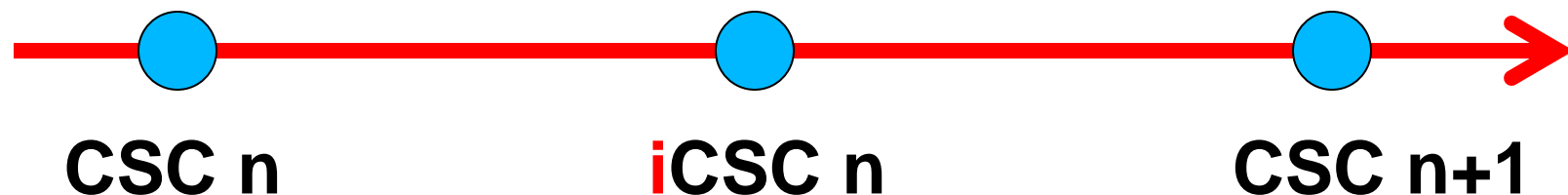
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# Why an inverted CSC ?

- At every CSCs, the sum of the knowledge of the students often exceeds the one of lecturer teaching, and that it is frequent to find in the room real experts on particular topics. This is the idea behind iCSC.

## Reversing the roles



# 2023: the 14<sup>th</sup> edition of the iCSC

**2005**



**2006**



**2008**



**2010**



**2011**



**2013**



**2014**



**2015**



**2016**



**2017**



**2018**



**2019**



**2020**



**2023**



# The inverted CSC

- At the end of each main school, we call students present to make proposals. When we receive sufficient proposals of appropriate quality, we organize an inverted school.



- The students combine their skills and elaborate on CSC related subjects.

# This year's topics (13, new record !)

- **Cloud & Containers - Everything you need to know**
  - **Everything that can go wrong in a message passing system**
  - **Authentication and Authorization for the WLCG**
  - **Quantum Computing**
  - **How a real-world C++ compiler works**
  - **CPU Performance Profiling on Linux in the HEP Context**
  - **Multiplatform Programming with Python**
  - **A simple introduction to accelerated computing**
  - **The most beautiful line you can draw with Kalman filter**
  - **An introduction to Bayesian neural networks and uncertainty quantification in neural networks**
  - **Graph Neural Networks: From fundamentals to Physics application**
  - **MLOps - Going from Good to Great**
  - **A Crash Course on Reinforcement Learning**
- Computer Science  
and Engineering
- Performance tuning  
and optimization
- Physics Computing
- Data Science and  
Machine learning

# This year's lecturer, 10 different institutes



**Ahmed Abdelmottaleb**  
Warwick University



**Martin Cejp**  
CERN



**Tom Dack**  
STFC



**Jack Henschel**  
CERN



**Ivan Kabadzhov**  
Freiburg University



**Peter Kicsiny**  
CERN and EPFL



**Piotr Konopka**  
CERN



**Charis Kleio Koraka**  
Wisconsin Madison



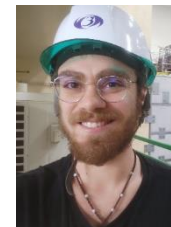
**Valeriia Lukashenko**  
NIKHEF, NL



**Michal Maciejewski**  
Roche



**Jacopo Talpini**  
Milano-Bicocca



**Ilias Tsaklidis**  
CERN



**Felix Wagner**  
HEPHY



# Lecturers at the iCSC

- **Many iCSC lecturers have become lecturers at various CSC schools**
  - Sebastian Lopienski (2005), Brice Copy (2005), Zornitsa Zaharieva (2005), Andrzej Nowak (2008), Benjamin Radburn-Smith (2010), Thomas Keck (2016), Daniel Campora (2017), Eamonn Maguire (2017), Hannah Short (2018)
- **... And one of them became director of the school**



# The lectures selection process

- **A tough competition**
  - We have received several outstanding proposals for a total of 80 hours of lectures – we could have run the school for two weeks
  - The speakers that could be accepted, had to significantly reduced the number of hours
- **This should bring you an excellent school content !**

# Remember: Selection process for lectures

- Discussion at the main / thematic school
- Lightning talks at the school
- Proposal after the school
- Review by the CSC Advisory committee
- Lecture preparation and development with mentors
  - (1-2 mentors for each lecturer) (December, January)
- Finally, the presentation at the school

**TODAY,  
TOMORROW,  
WEDNESDAY,  
THURSDAY**

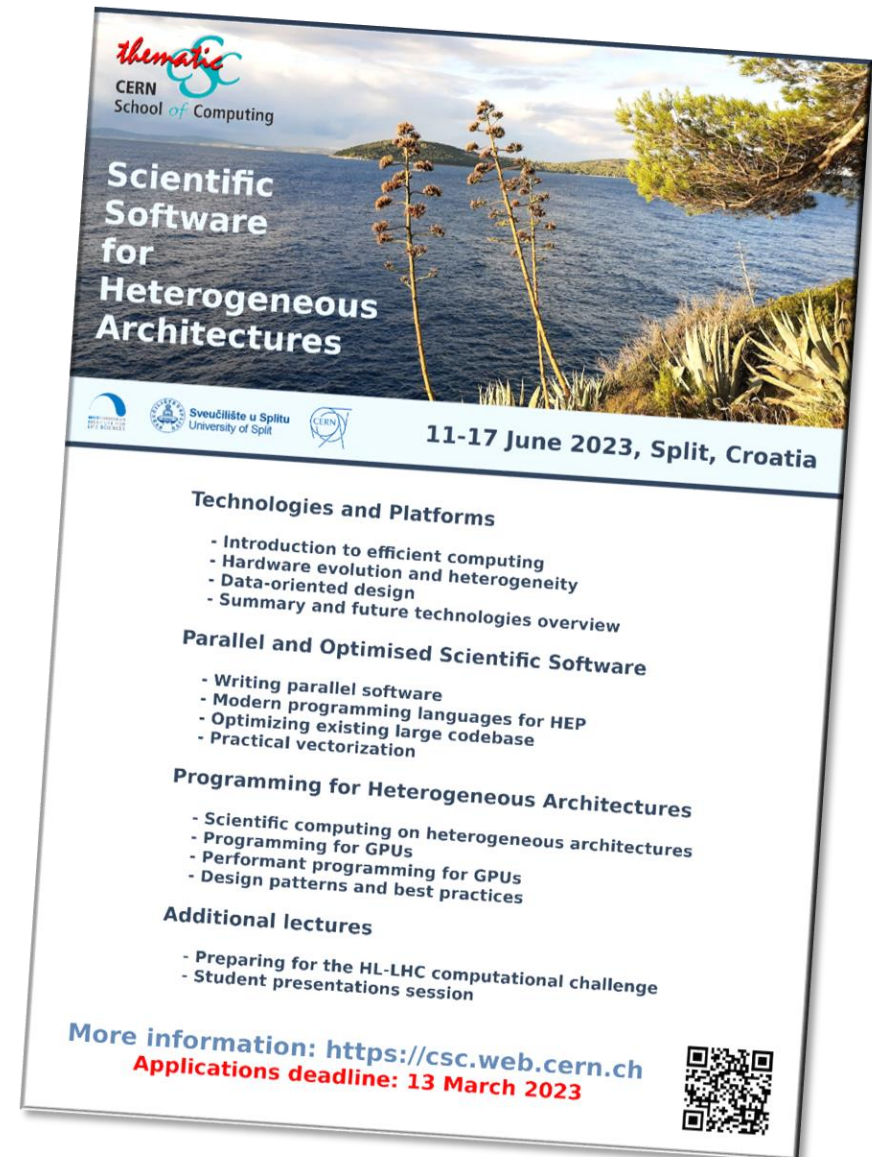
# This year's mentors

- **Guilherme Amadio**
- **Daniel Campora**
- **Dejan Golubovic**
- **Stephan Hageboeck**
- **Javier Lopez Gomez**
- **Alberto Pace**
- **Sebastien Ponce**
- **Ricardo Rocha**
- **Toni Sculac**
- **Hanna Short**
- **Are Strandlie**

**THANKS !**

# The next school

- The thematic **tCSC** 2023
- 11-17 of June
- Split, Croatia
- Registration **OPEN**  
(until March 13<sup>th</sup>)



# The next Main School

- The CSC 2023
- 20 August - 2 September
- Tartu, Estonia
- Registration opens  
**in April**
- <http://cern.ch/csc>



UNIVERSITY OF TARTU

# Before starting ...

# A thanks to the previous shools staff

- **Sebastian Lopienski**

- Our previous **Director**



- **Joelma Tolomeo**

- Our previous **Administrative Manager**





# Introducing the school staff

- **Kristina Gunne**
  - New school **Administrative Manager** from January 2023
- **Jarek Polok**
  - The school **Technical Manager**





# Now ... Let's start !