EPFL-ACH
Pr. Paolo Ricci (Academic Director & PI)
Dr. Gilles Fourestey (Operations Director)

EPFL-ACH in a nutshell

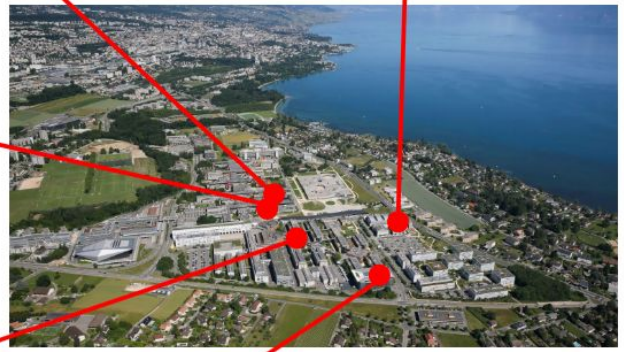
EPFL SCITAS
Scientific IT and Application Support

Support center for HPC applications and provider of advanced computing platforms (~35 people)

EPFL Swiss Plasma Center (~ 200 people, theory group: ~ 40 people)

Experimental Museology +

Virtual, augmented, mixed reality, through advanced computer science and state-of-the-art visualization facilities (~10 people)



MATHICSE

Computational Science and Engineering Mathematics group (~70 people)

Swiss Data Science Center, national institute for artificial intelligence and machine learning techniques (~50 people)

EUROfusion

… to an even larger involvement



A comprehensive support, from HPC code design to visualization

We are a competence center for
- methods, providing specific support to specific needs
- applications, developing and maintaining EUROfusion software



EPFL-ACH: 2021/2026

- 21 Projects over 6 years
- TSVV-01, 02, 03, 04, 06, 09, 10, 11, 12, 13, 15

Projects scope:

- GPU porting/portability
- Solver optimization (Sparse linear algebra)
- Profiling
- General optimization (vectorization, threading...)
- Parallelization (MPI, ...)
- Visualization
- **Algorithmic refactoring**
- **Digital Twin**
- **Surrogate models**

- ASCOT5
- CAS3D
- DEFUSE
- EFRDT (outreach)
- EUTERPE
- FELTOR
- GBS
- Free Boundary EQ
- GENE
- GENE-3D
- GENE-X
- ORB5
- GRILLIX
- GYACOMO
- GYSELA
- HeLaZ
- HYMAGYC
- JOREK
- MEQ
- SOLEDGE3X
- SPEC

Agenda

9:20 AM → 11:00 AM **Reports from ACH-EPFL members**

Convener: Gilles Fourestey (EPFL)

9:20 AM	**Soledge3X Code Optimization and GPU Production Computing for the WEST Tokamak** **Speaker**: Mathieu Peybernes (EPFL)	25m
9:45 AM	**Improvements for Vlasov Kernel in GENEX** **Speaker**: Piyush Panchal (EPFL)	25m
10:10 AM	**Gysela-X++** **Speaker**: Emily Bourne (EPFL)	25m
10:35 AM	**Fusion Digital Twin** **Speaker**: Florian Cabot (EPFL)	25m

11:00 AM → 11:20 AM **Coffee Break** 20m

11:20 AM → 12:35 PM **Reports from ACH-EPFL members cont.**

11:20 AM	**Implicit Solver Performance: Bottlenecks and Optimizations in GBS and Beyond Compute: Communication Profiling and Optimization in FELTOR** **Speaker**: Nicola Varini (EPFL)	25m
11:45 AM	**ASCOT5-GPU physics improvements** **Speaker**: Gilles Fourestey (EPFL)	25m
12:10 PM	**KINDNES and SPECTRE** **Speaker**: Emmanuel Lanti (EPFL)	25m