



# Sustainable Computing: Workshop Introduction

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FH Sustainable Computing Workshop

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# Sustainable Computing: What and Why

- Experimental high energy physics is a **computationally intensive field**
  - **Petabytes/exabytes** of data and simulation
  - Large CPU and GPU demands (trigger, offline)
- **Maximizing the physics potential** requires an **investment in the software** used to collect, process, and analyze the data and simulation
- **Sustainable computing** is the idea that we need to **maintain the computational ability** to perform HEP:
  - At the **rate** we want **(physics)**
  - For **as long** as we want **(reproducibility, preservation, scalability)**
  - While **minimizing the impact on the planet (efficiency, minimizing waste, reducing memory consumption)**




# Sustainable Computing Workshop (I)

- This is a **2-day workshop** hosted by the FH Sustainability Forum and FH IT experts
- **You will learn:**
  - Some features of writing **efficient code**
  - Hints to use **batch computing** in a **sustainable** way
  - Some do's and don'ts to **maximize resources** and **minimize waste**
- Examples demonstrated with local computing clusters and **tailored to the needs of the DESY particle physics (FH) division**
- **Short talks followed by hands-on examples - bring your laptop! Let us know before we start if you can't ssh to the NAF**
- In person, but with zoom available

# Sustainable Computing Workshop (II)

- This is the third installment of this workshop: **targeted towards beginners, including people new to the NAF/DESY**
- We offer this workshop at regular intervals, so that incoming students and postdocs can profit
- Also options for more advanced, topical workshops - let us know if you have ideas for topics!
- **Agenda:** <https://indico.desy.de/event/43906>
- **Zoom:** <https://cern.zoom.us/j/62785538071?pwd=dXJFZndHK0g4eVNaelArSjVjaUFQZz09>
- **Mattermost:** <https://chat.desy.de/desy/channels/fh-sustainable-computing-workshop>
- **Exercises:** <https://gitlab.desy.de/fh-sustainability-forum/sustainable-coding-tutorial>
- At the end of the workshop: **brief closeout survey**, similar to what you filled in when registering - please fill out!

# Today's Agenda: The NAF, ROOT, and Batch Computing

MONDAY, OCTOBER 7		
<b>9:00 AM → 10:45 AM Monday early morning</b>		
9:00 AM	<b>Workshop introduction and overview</b> Speaker: Juliette Alimena (DESY-CMS)	📍 SR 1 ⌵ 🕒 15m ⌵
9:15 AM	<b>Introduction to the NAF</b> Speakers: Dr Kilian Schwarz (IT (IT Scientific Computing)), Thomas Hartmann (IT (IT Systems)), Yves Kemp (IT (IT Systems))	🕒 1h 30m ⌵
<b>10:45 AM → 11:15 AM Coffee break</b>		
<b>11:15 AM → 12:45 PM Monday late morning</b>		
11:15 AM	<b>Introduction to ROOT</b> Speakers: Eleanor Jones (ATLAS (ATLAS-Experiment)), Frank Gaede (FTX (FTX Fachgruppe SFT)), Thomas Madlener (FTX (FTX Fachgruppe SFT))	📍 SR 1 ⌵ 🕒 1h 30m ⌵
<b>12:45 PM → 1:45 PM Lunch</b>		
<b>1:45 PM → 3:15 PM Monday early afternoon</b>		
1:45 PM	<b>The NAF and Batch Computing</b> Speaker: Christoph Beyer (IT (IT Systems)) 	📍 SR 1 ⌵ 🕒 1h 30m ⌵
<b>3:15 PM → 3:45 PM Coffee break</b>		
<b>3:45 PM → 5:30 PM Monday late afternoon</b>		
3:45 PM	<b>Batch computing</b> Speaker: Christoph Wissing (DESY)	📍 SR 1 ⌵ 🕒 1h ⌵
4:45 PM	<b>NAF Q&amp;A</b> Speakers: Christoph Beyer (IT (IT Systems)), Dr Kilian Schwarz (IT (IT Scientific Computing)), Thomas Hartmann (IT (IT Systems)), Yves Kemp (IT (IT Systems))	🕒 45m ⌵

Will be provided!

NOT provided

Will be provided!

Open to all. Come with your questions/ issues while using the NAF, to ask the experts directly!

# Tomorrow's Agenda: Coding Practices, GIT, CI

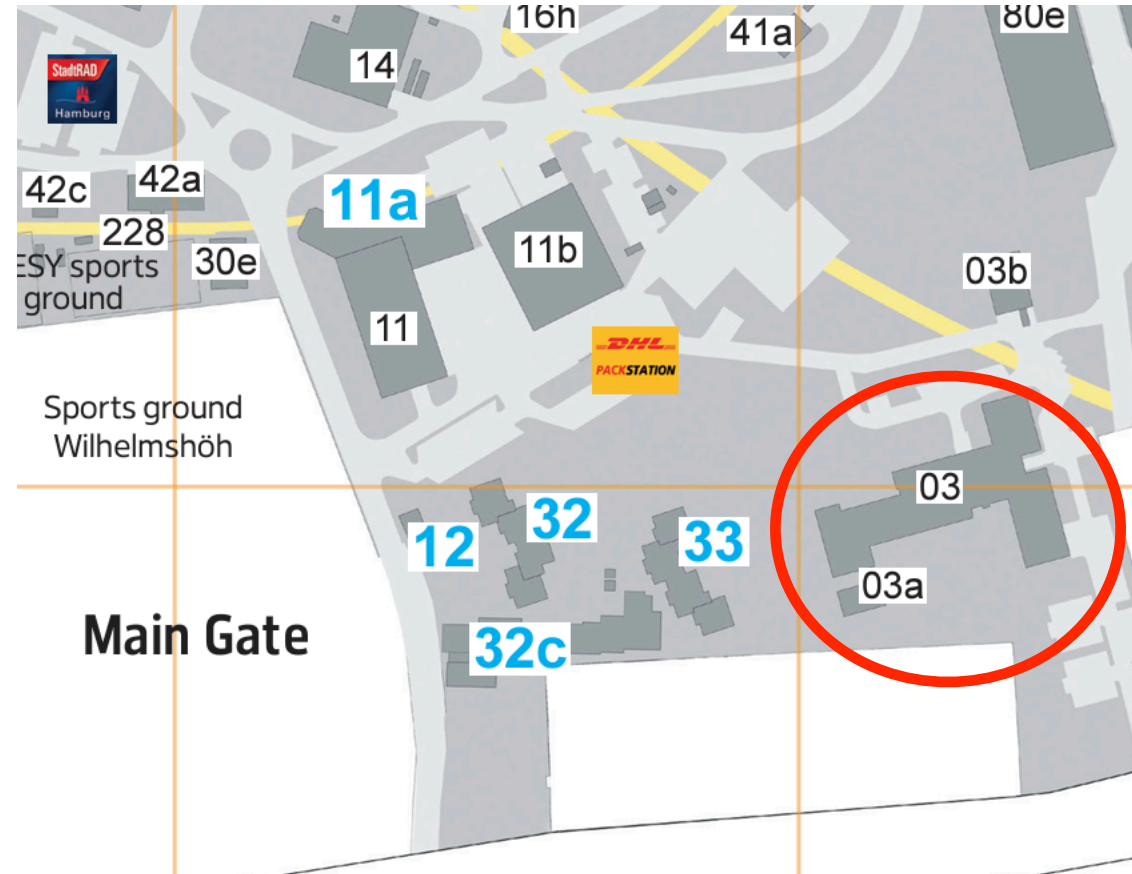
TUESDAY, OCTOBER 8		
9:00 AM → 11:00 AM	Tuesday early morning	SR 4a
9:00 AM	<b>Best coding practices</b> Speaker: Thomas Madlener (FTX (FTX Fachgruppe SFT))	1h 30m
10:30 AM	<b>Introduction to GIT (talk)</b> Speaker: Juliette Alimena (CMS-DESY)	30m
11:00 AM → 11:30 AM	Coffee break	30m SR 4a
11:30 AM → 12:30 PM	Tuesday late morning	SR 4a
11:30 AM	<b>Introduction to GIT (hands on)</b> Speaker: Juliette Alimena (CMS-DESY)	1h
12:30 PM → 1:30 PM	Lunch	1h Canteen
1:30 PM → 3:30 PM	Tuesday early afternoon	SR BAH1
1:30 PM	<b>Continuous integration</b> Speakers: Christoph Wissing (DESY), Juliette Alimena (CMS (CMS Fachgruppe Searches)), Dr Kilian Schwarz (IT (IT Scientific Computing)), Tigran Mkrtchyan (DESY-IT, Scientific Computing)	1h 30m
3:00 PM	<b>General Q&amp;A/ overflow</b>	30m
3:30 PM → 4:00 PM	Coffee break	30m SR BAH1
4:00 PM → 5:00 PM	Tuesday late afternoon	SR BAH1
4:00 PM	<b>General Q&amp;A / Overflow</b>	45m
4:45 PM	<b>Closing</b> Speaker: Juliette Alimena (CMS-DESY)	15m

→ Will be provided!

→ NOT provided

→ Will be provided!

# BAH1 is in building 3, by the main entrance



Ask questions! Try things out! Discuss!

Enjoy!