JUWELS BOOSTER ONBOARDING
SC23 TUTORIAL *SESSION 1B*

13 November 2023 | Andreas Herten | Jülich Supercomputing Centre, Forschungszentrum Jülich

JÜLICH Forschungszentrum

Accessing JUWELS Booster

- Everything listed on GitHub repo of tutorial:
  https://go.fzj.de/mg-gh[1]

[1] Unshortened link: https://github.com/FZJ-JSC/tutorial-multi-gpu/

Accessing JUWELS Booster

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  `https://go.fzj.de/mg-gh`[1]

1. Create JSC account at JuDoor
2. Join `training2332` project

→ `https://go.fzj.de/mg-jd`

3. Accept usage agreement
4. Wait 15 minutes 
5. Access system via Jupyter 3.6
   JUWELS, `training2332`, `LoginNodeBooster`

→ `jupyter-jsc.fz-juelich.de`

6. Source course environment in a Jupyter Shell
   ```
   $ source $PROJECT_training2332/env.sh
   ```
7. Gather course material
   ```
   $ jsc-material-sync
   ```

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Accessing JUWELS Booster

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- Please start process now
- We'll repeat the following steps in the first hands-on session

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- Swapcard

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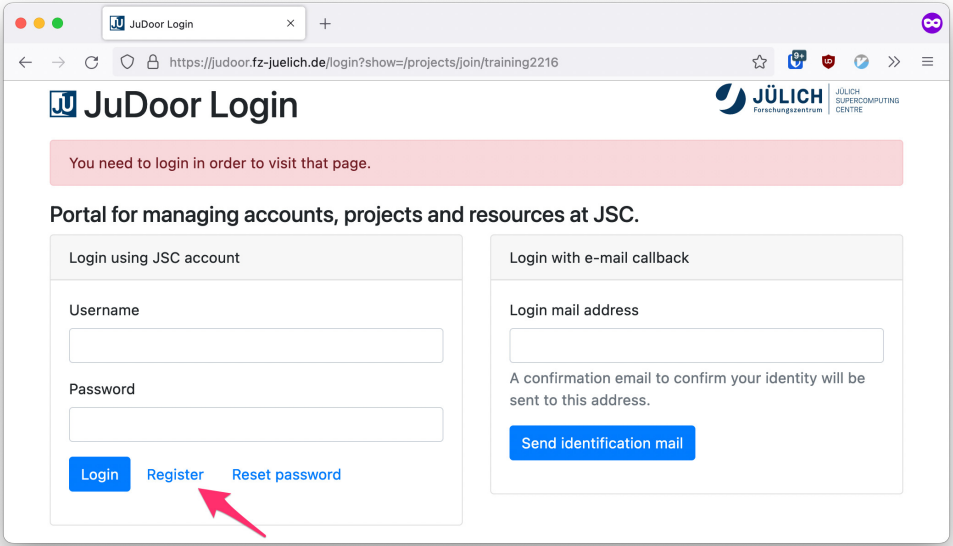
JuDoor Login
https://judoor.fz-juelich.de/login?show=/projects/join/training2216
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You need to login in order to visit that page.
Portal for managing accounts, projects and resources at JSC.
Login using JSC account
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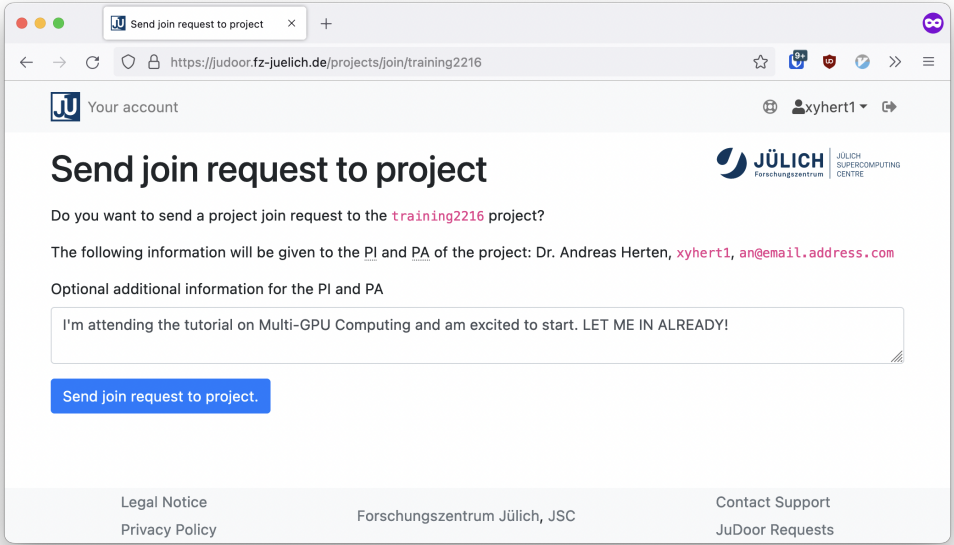
Password
Login
Register
Reset password
Login with e-mail callback
Login mail address
A confirmation email to confirm your identity will be sent to this address.
Send identification mail


Send join request to project
https://judoor.fz-juelich.de/projects/join/training2216
Your account
xyhert1
Send join request to project
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Do you want to send a project join request to the training2216 project?
The following information will be given to the PI and PA of the project: Dr. Andreas Herten, xyhert1, an@email.address.com
Optional additional information for the PI and PA
I'm attending the tutorial on Multi-GPU Computing and am excited to start. LET ME IN ALREADY!
Send join request to project.
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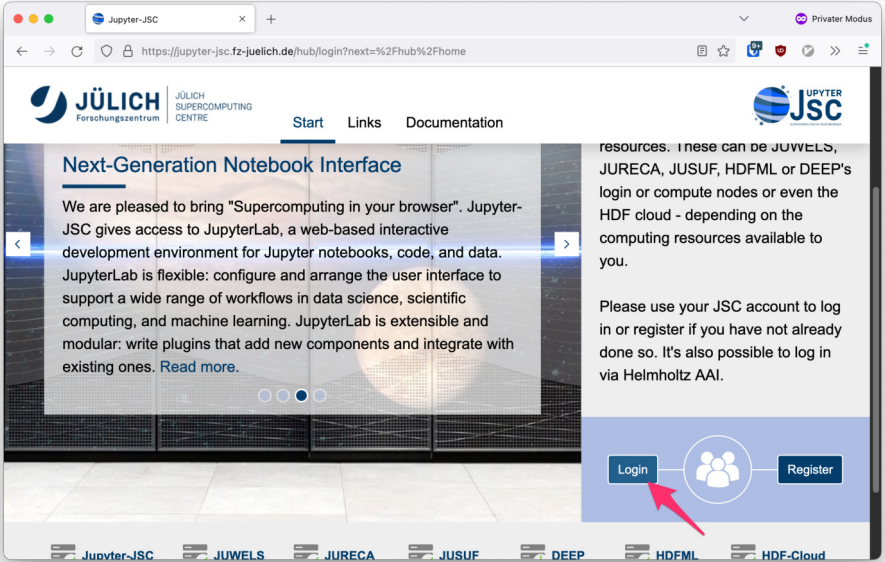
JuDoor Requests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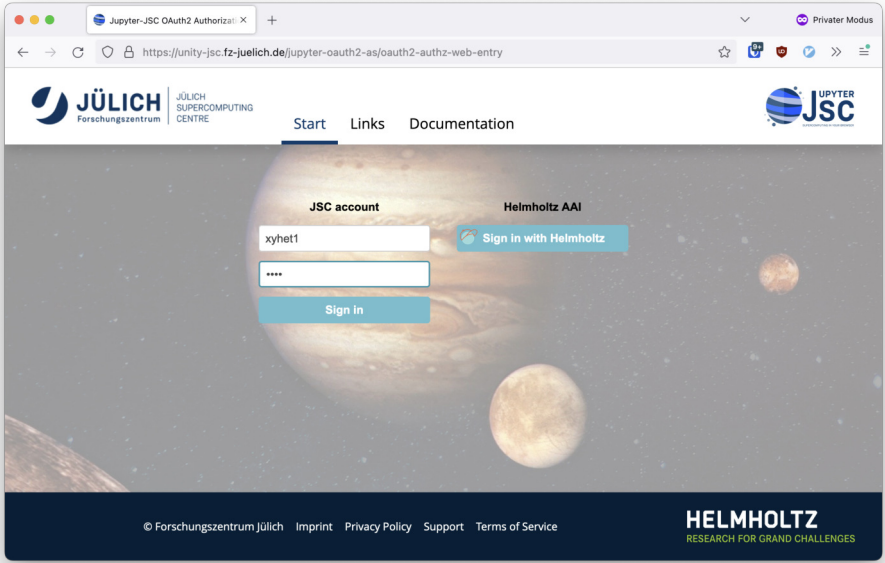
Next-Generation Notebook Interface
We are pleased to bring "Supercomputing in your browser". Jupyter-JSC gives access to JupyterLab, a web-based interactive development environment for Jupyter notebooks, code, and data. JupyterLab is flexible: configure and arrange the user interface to support a wide range of workflows in data science, scientific computing, and machine learning. JupyterLab is extensible and modular: write plugins that add new components and integrate with existing ones. Read more.
resources. These can be JUWELS, JURECA, JUSUF, HDFML or DEEP's login or compute nodes or even the HDF cloud - depending on the computing resources available to you.
Please use your JSC account to log in or register if you have not already done so. It's also possible to log in via Helmholtz AAI.
Login
Register
Jupyter-JSC
JUWELS
JURECA
JUSUF
DEEP
HDFML
HDF-Cloud


Jupyter-JSC OAuth2 Authorizat
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https://unity-jsc.fz-juelich.de/jupyter-oauth2-as/oauth2-authz-web-entry
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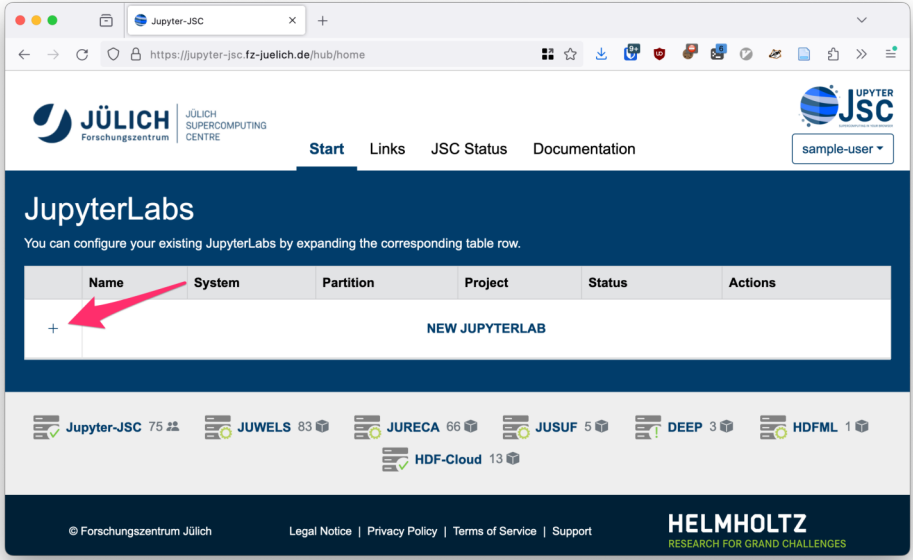
Jupyter-JSC
https://jupyter-jsc.fz-juelich.de/hub/home
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Start
Links
JSC Status
Documentation
UPYTER JSC
sample-user
JupyterLabs
You can configure your existing JupyterLabs by expanding the corresponding table row.
Name
System
Partition
Project
Status
Actions
+
NEW JUPYTERLAB
Jupyter-JSC 75
JUWELS 83
JURECA 66
JUSUF 5
DEEP 3
HDFML 1
HDF-Cloud 13
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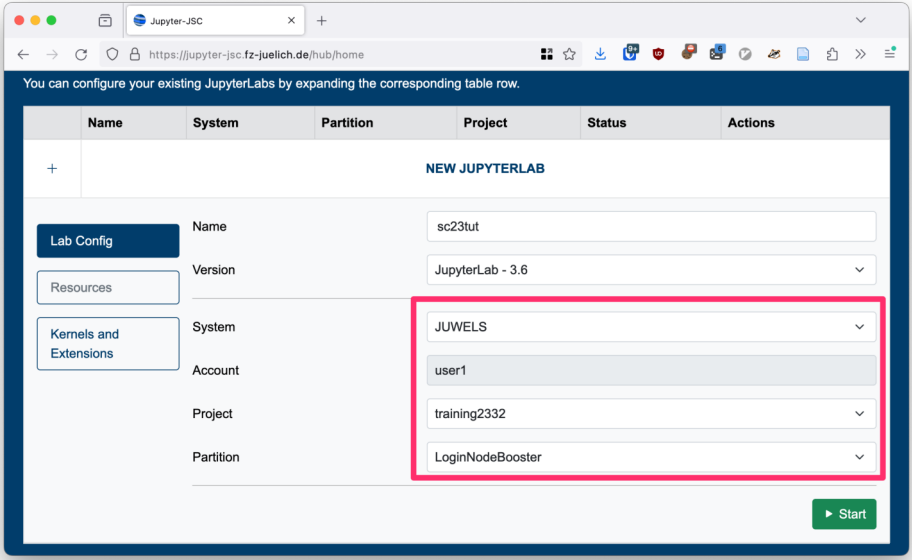
Jupyter-JSC
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You can configure your existing JupyterLabs by expanding the corresponding table row.
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System
Partition
Project
Status
Actions
NEW JUPYTERLAB
Lab Config
Resources
Kernels and Extensions
Name
sc23tut
Version
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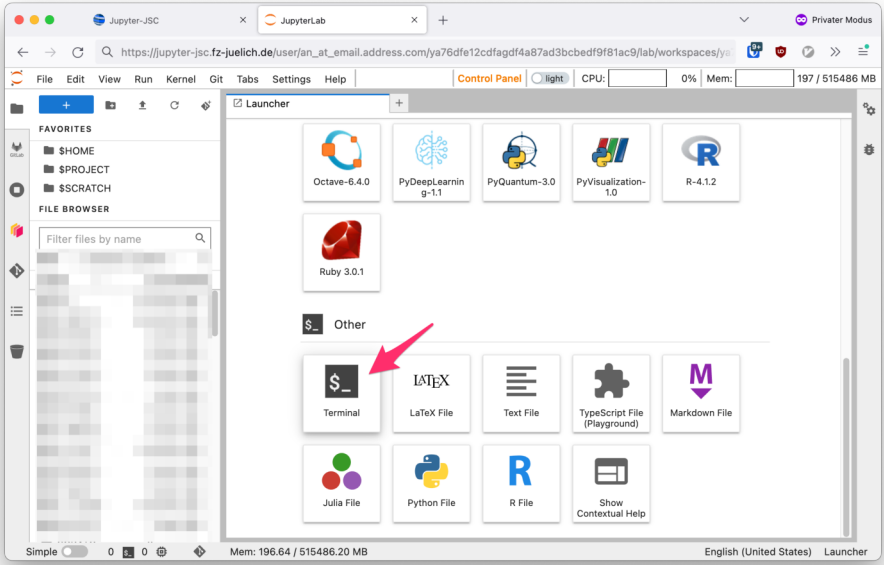
System
JUWELS
Account
user1
Project
training2332
Partition
LoginNodeBooster
Start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FILE BROWSER
Filter files by name
Launcher
Octave-6.4.0
PyDeepLearning-1.1
PyQuantum-3.0
PyVisualization-1.0
R-4.1.2
Ruby 3.0.1
Other
Terminal
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Text File
TypeScript File (Playground)
Markdown File
Julia File
Python File
R File
Show Contextual Help
Simple
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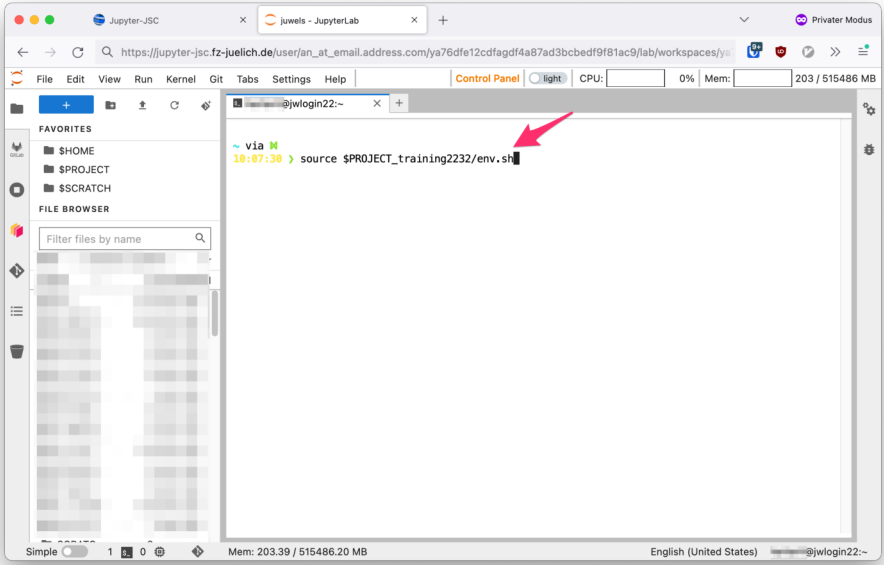
Launcher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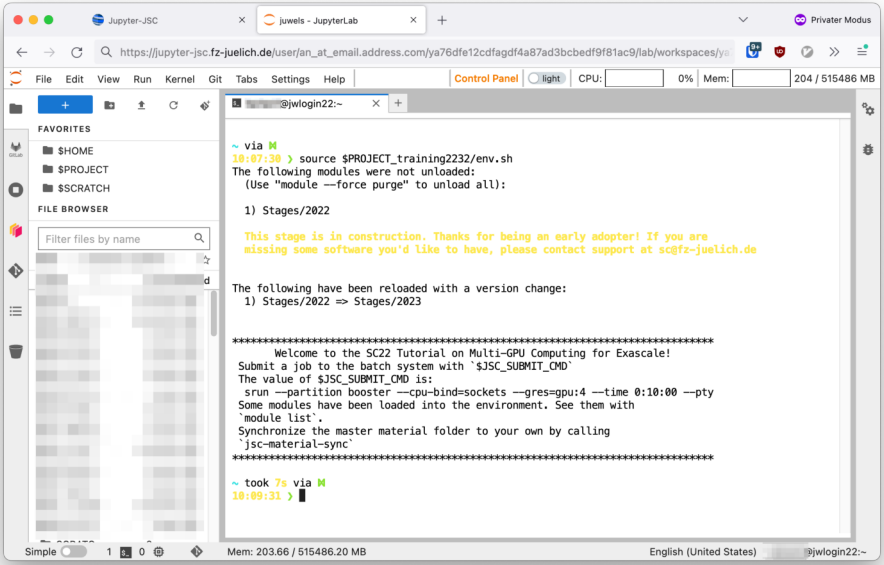
@jwlogin22:~
~ via
10:07:30 ❯ source $PROJECT_training2232/env.sh
Simple
Mem: 203.39 / 515486.20 MB
English (United States)
@jwlogin22:~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204 / 515486 MB
FAVORITES
$HOME
$PROJECT
$SCRATCH
FILE BROWSER
Filter files by name
@jwlogin22:~
~ via M
10:07:30 ❯ source $PROJECT_training2232/env.sh
The following modules were not unloaded:
(Use "module --force purge" to unload all):
1) Stages/2022
This stage is in construction. Thanks for being an early adopter! If you are
missing some software you'd like to have, please contact support at sc@fz-juelich.de
The following have been reloaded with a version change:
1) Stages/2022 => Stages/2023
Welcome to the SC22 Tutorial on Multi-GPU Computing for Exascale!
Submit a job to the batch system with `$JSC_SUBMIT_CMD`
The value of $JSC_SUBMIT_CMD is:
srun --partition booster --cpu-bind=sockets --gres=gpu:4 --time 0:10:00 --pty
Some modules have been loaded into the environment. See them with
`module list`.
Synchronize the master material folder to your own by calling
`jsc-material-sync`
~ took 7s via M
10:09:31 ❯
Simple
Mem: 203.66 / 515486.20 MB
English (United States)
@jwlogin22:~

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Profiling Tools

- Extra Credits: Prepare for *Profiling Session*
- Download **Nsight Systems** now; install!

→ `developer.nvidia.com/gameworksdownload#?dn=nsight-systems-2023-2`

- Also: Via package manager `developer.download.nvidia.com/devtools/repos`

SSH Login

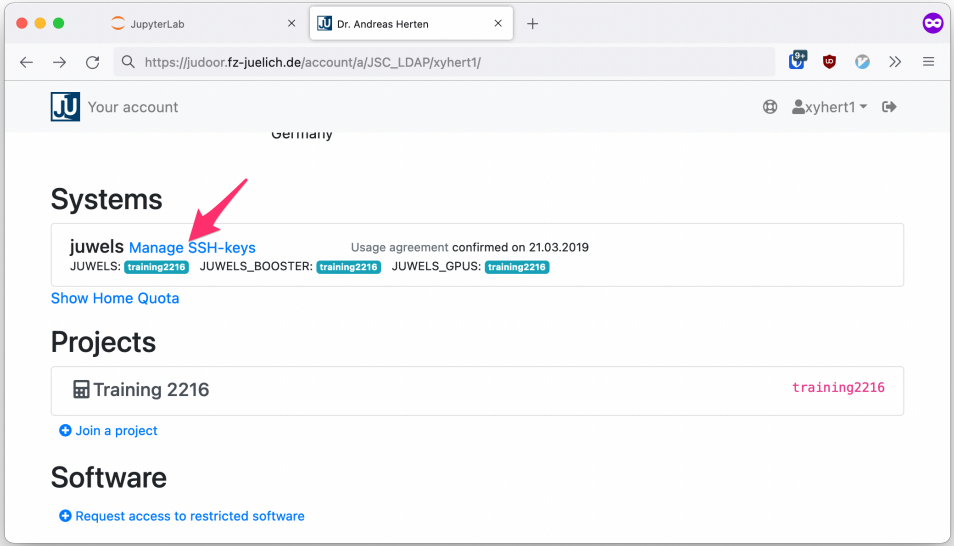
SSH Login

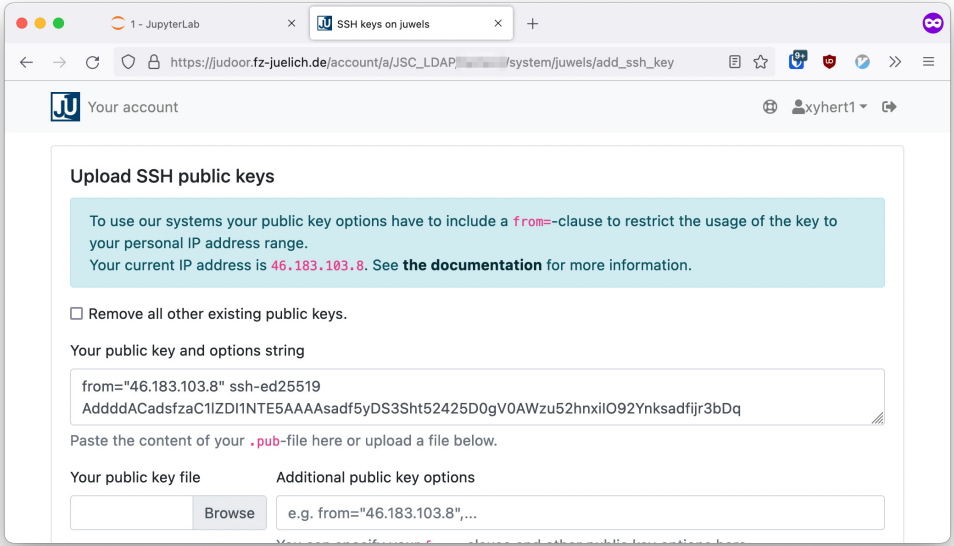
- Login with SSH available
- We recommend Jupyter JSC: easier, more features
- Add SSH key via JuDoor to JUWELS Booster
- Important: `from` clause (limits connections to be from defined sources)
- Example

```
from="140.221.0.0/16,2001:468:1F07::/48" ssh-ed25519 AddddACadsfzaC1lZDI1NTE5AAAAsa
```

→ SSH: `ssh user1@juwels-booster.fz-juelich.de`

- Help at `apps.fz-juelich.de/jsc/hps/juwels/access.html`


JupyterLab
Dr. Andreas Herten
https://judoor.fz-juelich.de/account/a/JSC_LDAP/xyhert1/
Your account
xyhert1
Germany
Systems
juwels Manage SSH-keys
Usage agreement confirmed on 21.03.2019
JUWELS: training2216 JUWELS_BOOSTER: training2216 JUWELS_GPUS: training2216
Show Home Quota
Projects
Training 2216
training2216
Join a project
Software
Request access to restricted software


1 - JupyterLab
SSH keys on juwels
https://judoor.fz-juelich.de/account/a/JSC_LDAP[redacted]/system/juwels/add_ssh_key
Your account
xyhert1
Upload SSH public keys
To use our systems your public key options have to include a from=-clause to restrict the usage of the key to your personal IP address range.
Your current IP address is 46.183.103.8. See the documentation for more information.
Remove all other existing public keys.
Your public key and options string
from="46.183.103.8" ssh-ed25519
AddddACadsfzaC1lZDI1NTE5AAAAsadf5yDS3Sht52425D0gV0AWzu52hnxiIO92Ynksadfijr3bDq
Paste the content of your .pub-file here or upload a file below.
Your public key file
Browse
Additional public key options
e.g. from="46.183.103.8",...