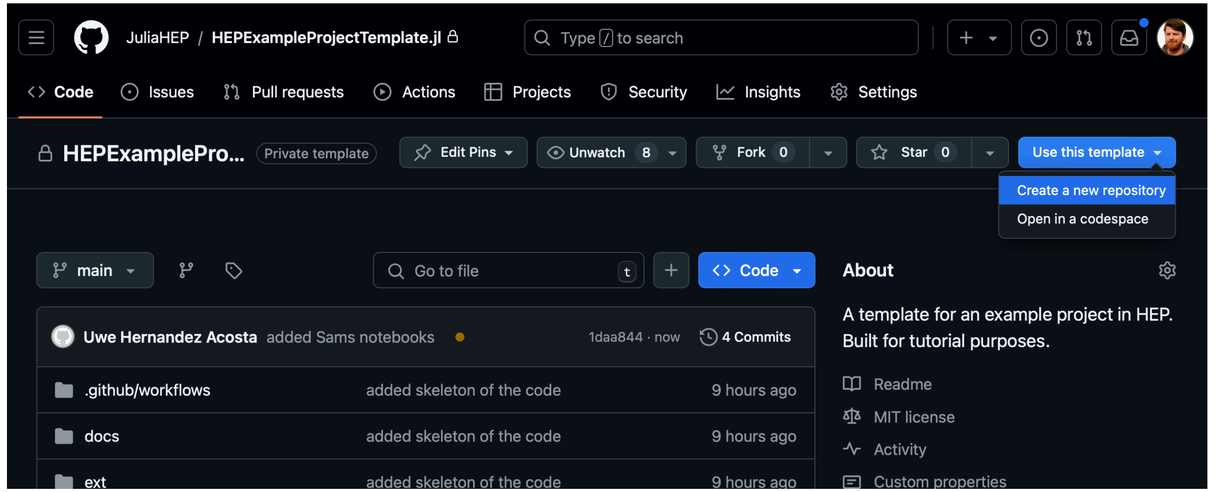
HEPExampleProject.jl

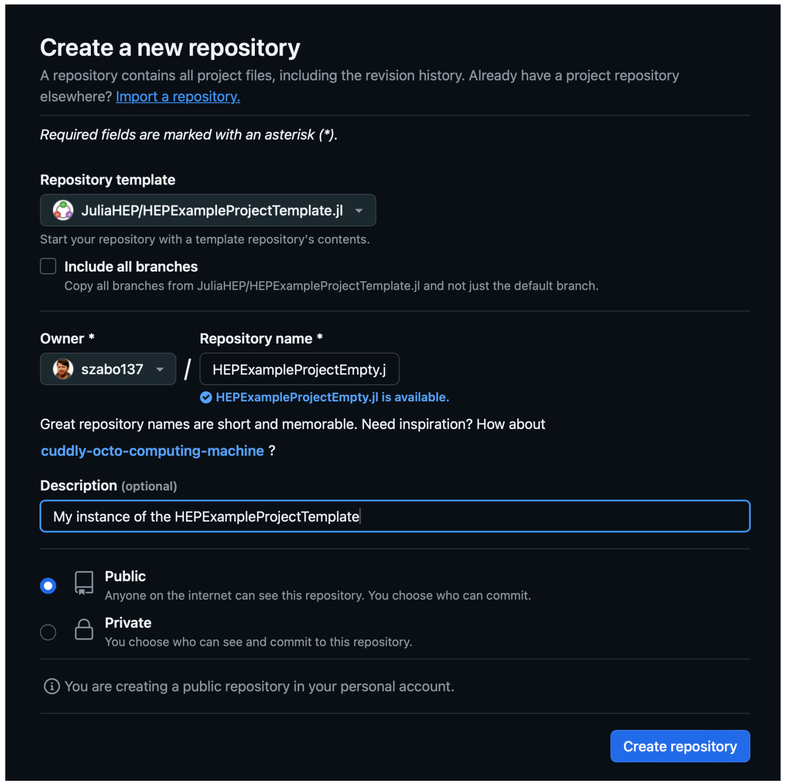
Leptonic muon pair production

- We build a simple event generator for $e^+e^- \to \mu^+\mu^-$
- Goals:
  - learn to use Julia in a package environment
  - Getting used to the tools and best practices
  - Having your own little HEP package
- Btw: we have a full working implementation which we share after the tutorial 😉

Plan of Action

- Go to https://github.com/JuliaHEP/HEPExampleProjectTemplate.jl (find the link in the indico 👩)
- Press the `Use this template` on the right-hand side of your screen and copy it to your account (⚠️ do not just clone it!)
- Now you can clone it to your computer and start hacking
- In the case of an emergency:
  - Reach out to us!
  - Push your code as is
  - We may open a PR on your repo to give you some code 😉





In case you are more interested in a more guided tour, consider looking at the notebooks folder 😉

Recommended Workflows

How-to work on the project

- TDD: there are unit tests in the project, which all fail in the beginning
- Workflow:
    1. Read the docstring
    2. Implement the body
    3. Run the test locally
    4. Repeat

Use the preferred way to adopt this workflow! If you have none, reach out to us!

Recommended order of implementation

1. Constants: `src/constants.jl`
2. Differential cross-section: `src/cross_sections.jl`
3. Four-momenta: `src/four_momentum.jl`
4. Events: `src/events.jl`
5. Event Generation:

    5.1. Serial: `src/event_generation/serial.jl`

    5.2.Threadsafe: `src/event_generation/serial.jl`