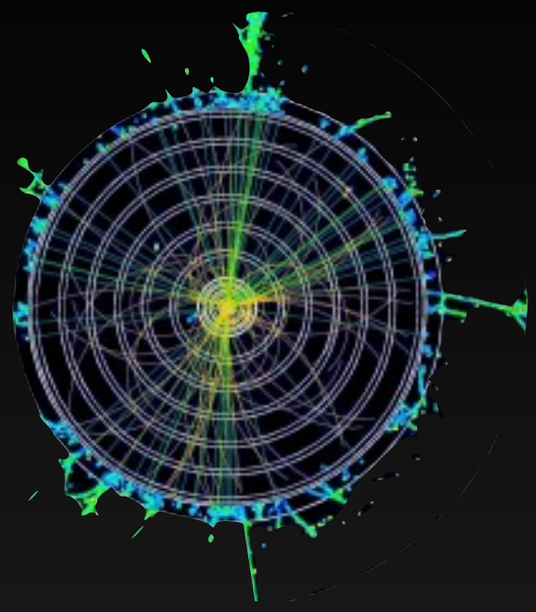


AdvCompPhys Lab 2024

Project: MC Simulations for Particle Physics

Enrico Bothmann – 12th June 2024

Quick Start

Quick Start Cheatsheet

1. get the project worksheet from Stud.IP
2. get utility code and reference data (see below)

```
git clone git@gitlab.gwdg.de:bothmann/advanced-computational-physics.git

mkdir my-project
cp -r advanced-computational-physics/{utils,sherpa.yoda} my-project
cd my-project
git init ; git add --all ; git commit -m "Add libs"

# inspect libs and create your own script
gedit utils/vector.py
gedit my_solution

``` example content of my_solution:
#!/usr/bin/env python

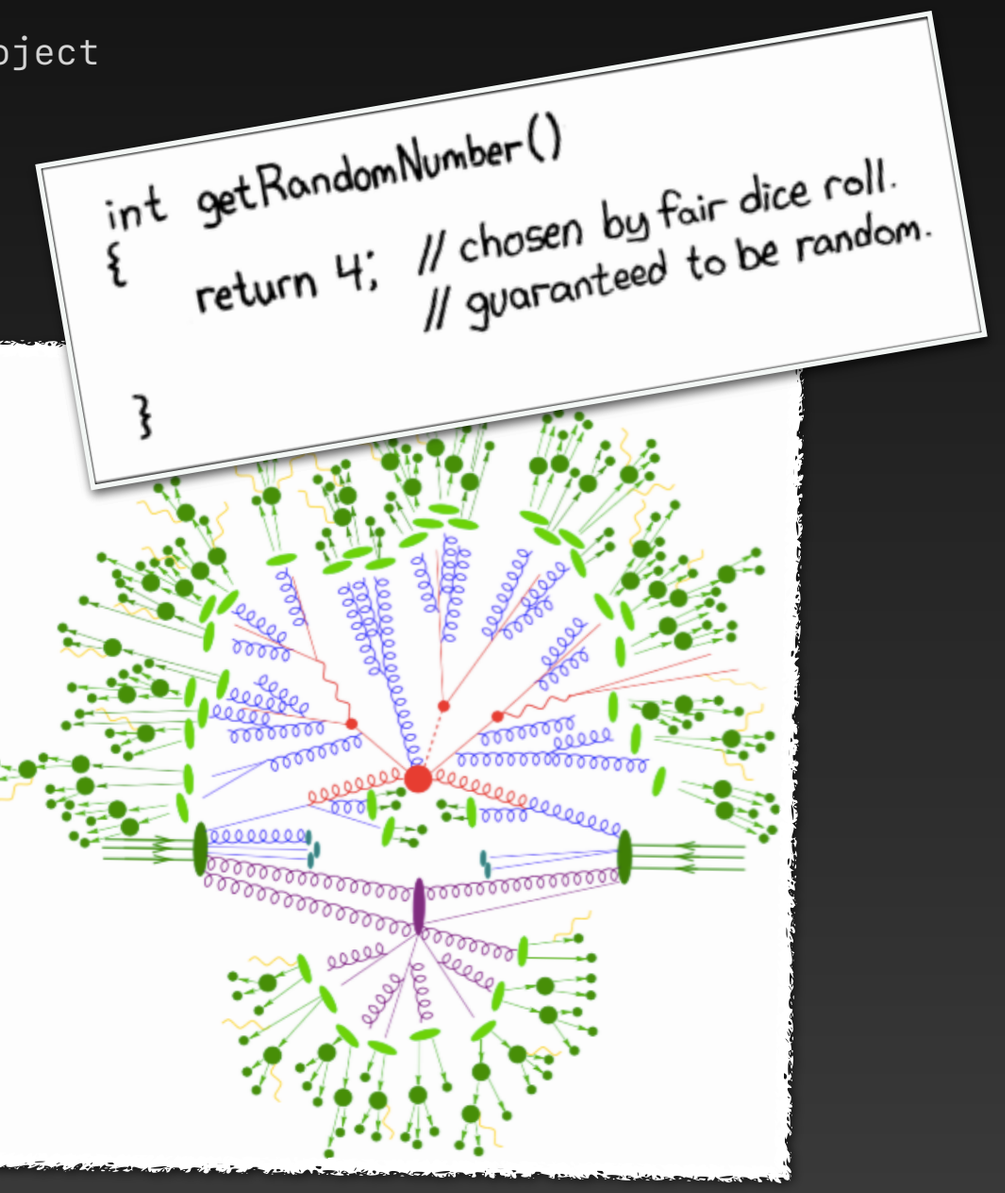
from utils.vector import Vec4

momentum = Vec4(128.9, 14.1, 3.3, 89.9)
print(momentum.invariant_mass())
```


make executable and run
chmod +x my_solution
./my_solution
→ 91.2...

get external libs, to make e.g. `import vegas` work
pip3 install vegas # or maybe pip3 install --user vegas
```

https://vegas.readthedocs.io/en/latest/tutorial.html



Best practices

- Mostly the same „Criteria for grading“ as in other projects
  40 % code, 10 % formal aspect, 50 % report, see project worksheet
- Use `python3`
  - language of provided library code
- Consider using `git`
  not just for sharing, but for organising your own work
- Readable code
  - simple code statements
  - add comments when useful
    unnecessary if code is truly self-explanatory

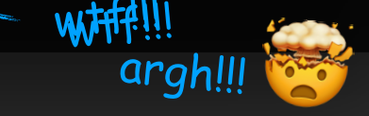
```
if (ic<0 || jc<0 || kc<0)
  THROW(fatal_error,"Invalid PS tree");
double ws, mu2;
int flip(jc<ic), swap(jc<campl->NIn() && flip);
if (swap) std::swap<int>(ic,jc);
int type((ic<campl->NIn()?1:0)|(kc<campl->NIn()?2:0));
Splitting s=p_clus->KT2
   (campl->Leg(ic),campl->Leg(jc),campl->Leg(kc),
    lij->Flav(),campl->Kin(),type,1|(swap?2:0),ws,mu2);
s.p_s=lmap[lampl->IdLeg(lij->K())];
s.p_c=lmap[lij];
(*----m_ampls.end())->SetSplit(s);
if (!flip || swap) RecoCheck(*----m_ampls.end(),swap);
```

huh?!

huh?!!?

wtf!!!

argh!!!



¿Questions?

- now?
- Stud.IP AdvCompPhys Lab forum
- enrico.bothmann@uni-goettingen.de
- Q & A sessions (Online meeting link will be announced on Stud.IP)

  Wed, 2:15pm–4pm (→ CIP Pool C.00.106)

  on-demand + online: Wed, 4pm–6pm, Fri 10:15am–12am

First session: Wed 19th June 2:15pm

➡ opportunity to get in contact among yourselves