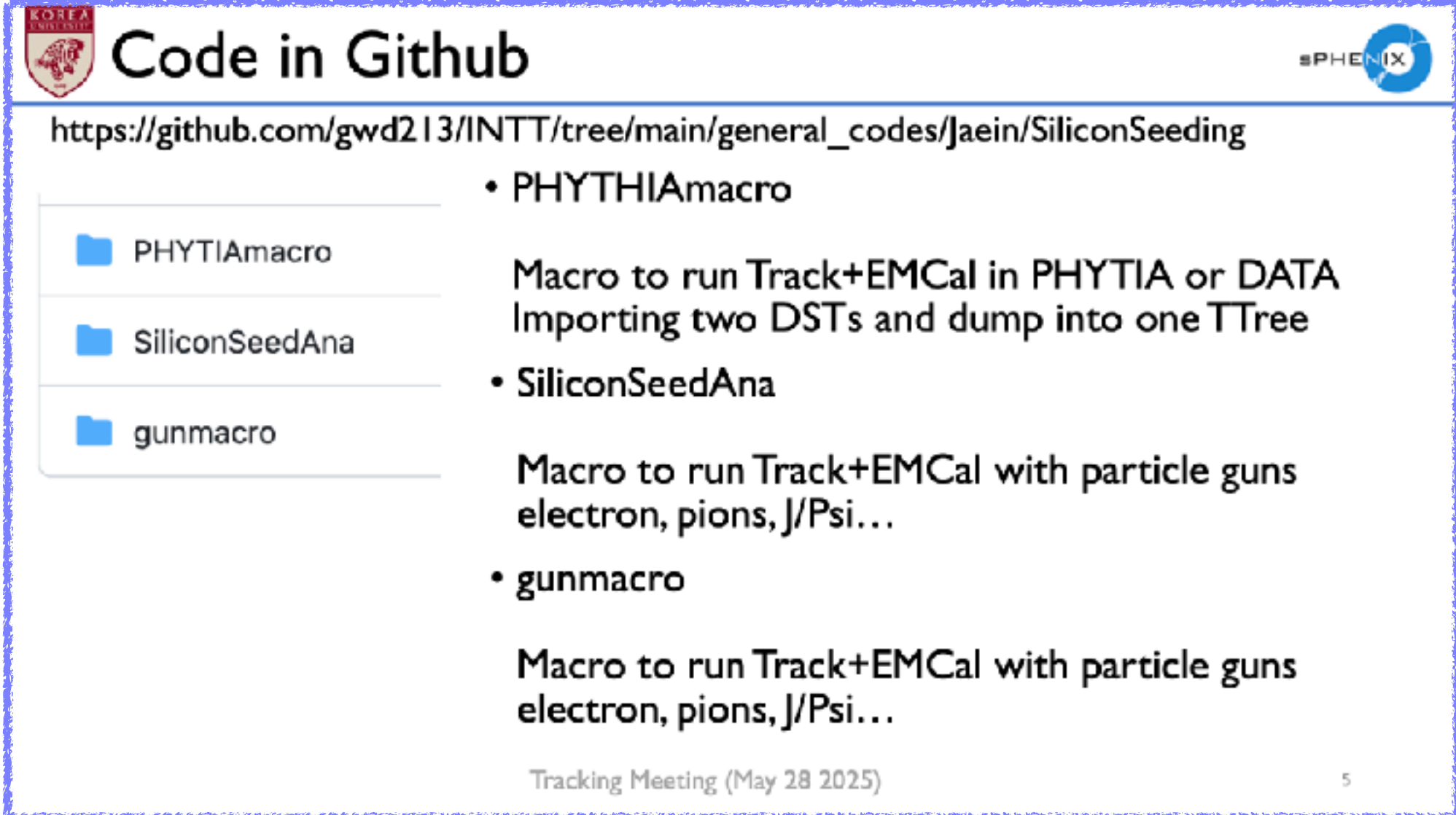# How to use silicon seeds ana code

For beginner

What is his code?

- This is a framework for Matching Sillicon(MVTX+INTT)Track + EMCal cluster.
  It can make a root file that has TTree with the necessary information for analysis.

  - Single gun simulation - most simple situation (ex : J/psi, e-…)

  - PHYTHIA - simulation or Data (p+p…)

- Code and Instructions

- Slide, Slide UpdateVer.

- Wiki

  - These framework were made by Jaein

- We can use it for calibration and our analysis…

  - ex (by Hachiya san)

Code in Github

https://github.com/gwd213/INTT/tree/main/general_codes/Jaein/SiliconSeeding

PHYTIAmacro

SiliconSeedAna

gunmacro

- PHYTHIAmacro

  Macro to run Track+EMCal in PHYTIA or DATA
  Importing two DSTs and dump into one TTree

- SiliconSeedAna

  Macro to run Track+EMCal with particle guns
  electron, pions, J/Psi…

- gunmacro

  Macro to run Track+EMCal with particle guns
  electron, pions, J/Psi…

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How to run? - Set up 1

- Downloading his codes. We should make directory for this, and do it

  - git clone https://github.com/sPHENIX-Collaboration/INTT.git
    (git clone can only download the entire repository)

- Compile. Make directory of "build" and "install" in "SiliconSeedAna" directory.

  - cd INTT/SiCalo/SiliconSeedAna

  - mkdir build install

  - cd build

  - ../autogen.sh --prefix=${PWD}/../install; make; make install

- If there are some error, you should check the version of software.

How to run? - Set up 2

- Through the path of your include directory.

  - source /opt/sphenix/core/bin/setup_local.sh [your install directory path]

  - Whether it works or not can be checked by doing these,

    - echo $LD_LIBRARY_PATH | tr : "\n"

    - echo $ROOT_INCLUDE_PATH | tr : "\n"

-

Try to run the code - PHYTIA

SiliconSeeding/PHYTIAmacro/Fun4All_PHYTIA_Silicon.C

- Before running, modifying output directly is required.

- Test running should set that "# of events" ~10.

  - In my situation, "Trkr_LaserClustering.C" has errors. It is not used in these macro, so if there are some error related to it, please comment out "#include <Trkr_LaserClustering.C>"

  - If there are some error or stopping code without any error massages. you should check that you don't have your "private coersoftware library build" in your directory and library list.
  Chang the number of "se->Verbosity(0);" to 5 or larger one might help solve the error, but it's no sure if it really will.

Try to run the code - PHYTIA

SiliconSeeding/PHYTIAmacro/Fun4All_PHYTIA_Silicon.C

- The branch size of each TTree are defined in SiliconSeedsAna module. When trying run this code to create the file, for example, # of events < 500 is worked by default. SiliconSeeding/SiliconSeedAna/SiliconSeedsAna.cc

```
SiClusTree->SetBasketSize("*",50000); // Set a larger
basket size for better performance
```

- Once branch size reaches to basket size (ex: set # of events is 1000…), the data file created is crashed somehow.

- When submitting the jobs to condor also, you should take care of the size of branch of each job.

Try to run the code - Single Gun Sim

SiliconSeeding/gunmacro/Fun4All_singleParticle_Silicon.C

- Almost same as PHYTHIA macro.

- The type of particle to simulate can be selected.


```
// std::string particle_name = "e-";
std::string particle_name = "J/psi";
```

- It takes time more than PHYTHIA due to simulating. Submit jobs to Condor is better.

- In single gun simulation, the size of branch would be less than PHYTHIA. It means that even if the # of events is more than 500, it may not crash like PHYTHIA (not sure).

Owari