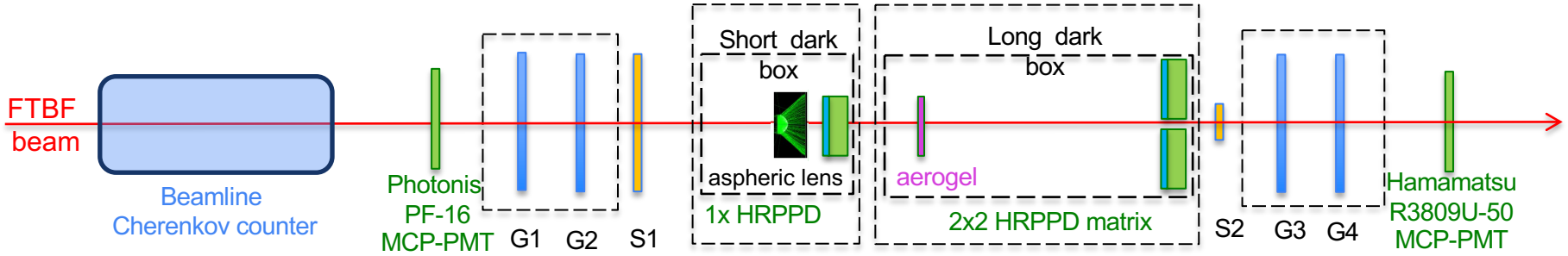
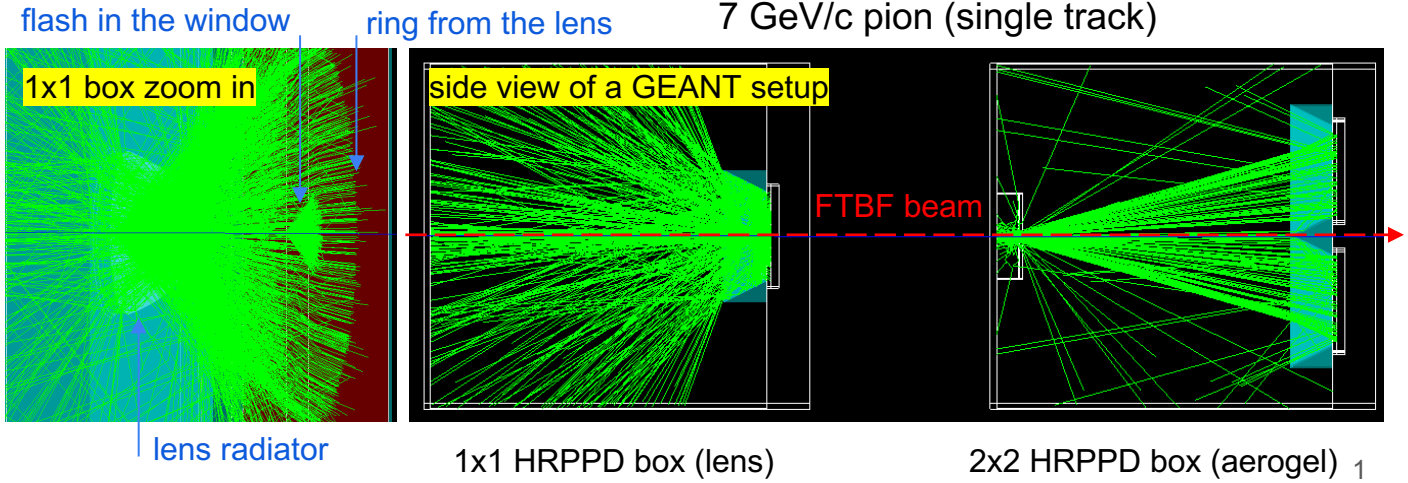
pfRICH standalone code update



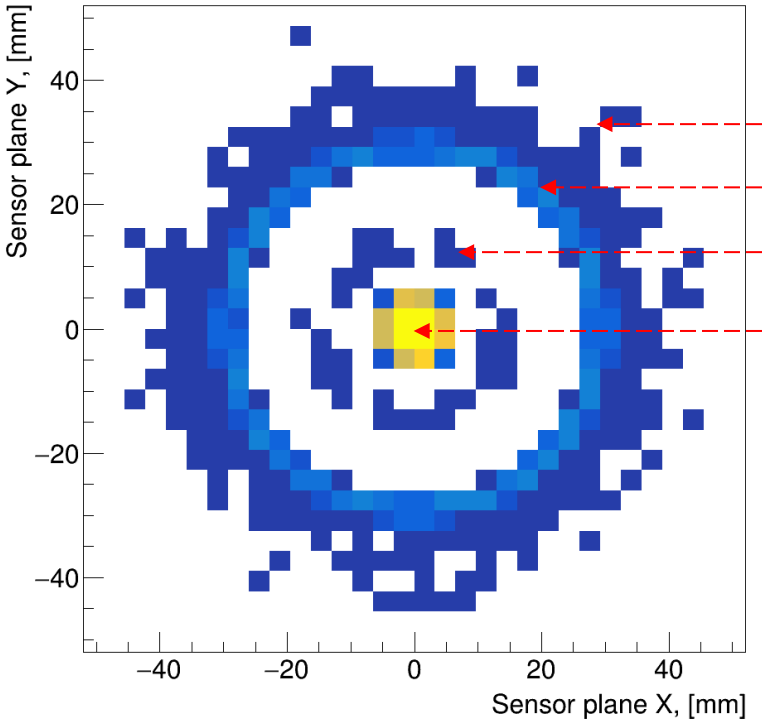
- Unify three setups (ePIC final, FTBF beam test "plan C", QA station optical head) in one repo

```
[ayk@mbeach pfRICH]$ ls -l
total 92
drwxrwxr-x 5 ayk ayk 4096 Jan 31 13:29 build
-rw-r--r-- 1 ayk ayk 5491 Jan 31 13:29 CMakeLists.txt
drwxrwxr-x 2 ayk ayk 4096 Aug 14 08:01 curves
drwxrwxr-x 2 ayk ayk 4096 Mar 10  2023 database
drwxrwxr-x 4 ayk ayk 4096 Jan 28 10:54 epic
drwxrwxr-x 2 ayk ayk 4096 Mar  5  2023 examples
drwxrwxr-x 4 ayk ayk 4096 Jan 28 11:22 ftbf
drwxr-xr-x 4 ayk ayk 4096 Sep 26  2021 g4irt
drwxrwxr-x 2 ayk ayk 4096 Aug 25 10:06 gdml
drwx------ 2 ayk ayk 4096 Jan 28 12:07 include
drwxrwxr-x 2 ayk ayk 4096 Jan 29 09:10 macro
drwxrwxr-x 6 ayk ayk 4096 Feb  1 10:58 obsolete
-rw-r--r-- 1 ayk ayk 4434 Jan 28 12:29 pfRICH.cc
drwxrwxr-x 2 ayk ayk 4096 Mar  2  2023 png
-rw-rw-r-- 1 ayk ayk  487 Aug 15 13:46 README.AYK
-rw-rw-r-- 1 ayk ayk 3142 Mar 10  2023 README.md
drwxrwxr-x 2 ayk ayk 4096 Jan 30 11:18 scripts
drwxrwxr-x 4 ayk ayk 4096 Jan 28 10:53 share
drwx------ 3 ayk ayk 4096 Jan 28 11:00 source
drwxrwxr-x 2 ayk ayk 4096 Aug 18 21:11 tmp.00
drwxrwxr-x 4 ayk ayk 4096 Jan 28 17:59 tstand
```



FTBF setup: hit map in a 1x1 HRPPD box

7 GeV/c pions (100 tracks)



photons produced & bounced in the aspheric lens

photons produced in the aspheric lens

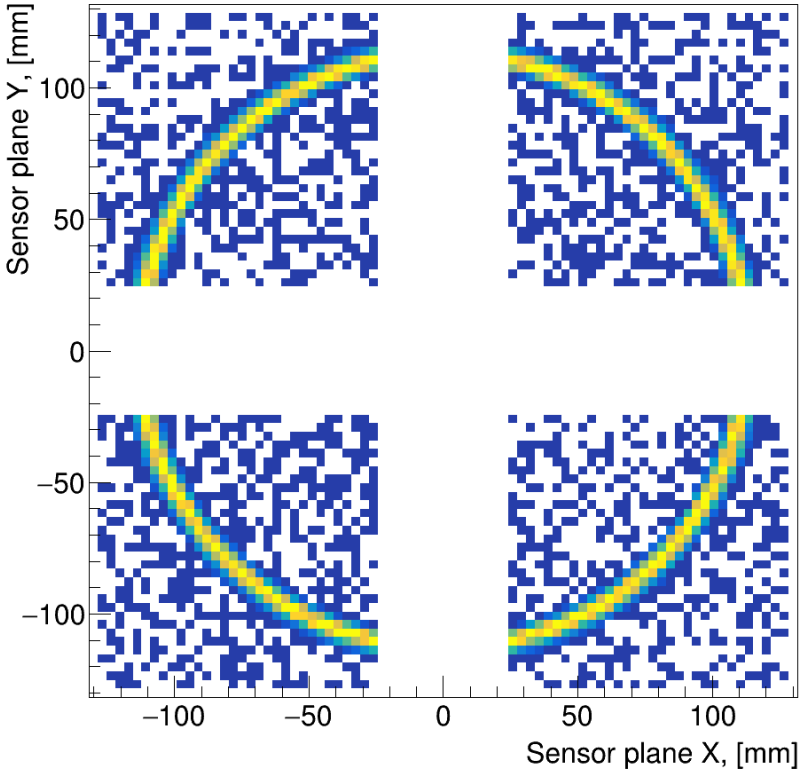
photons produced & bounced in the HRPPD window

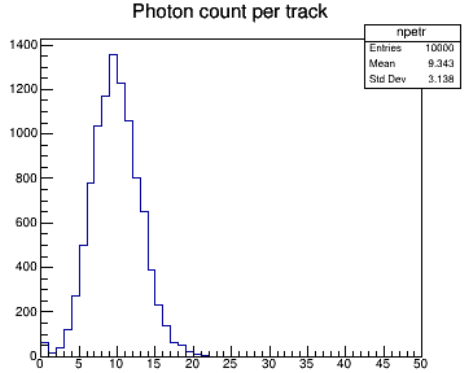
photons produced in the HRPPD window

- Photons from the lens are easy to identify
  - A narrow ring; may require inversed geometry
- Their <N_{pe}> must be defined rather well
- They have very small spread in timing
  - May also require inversed geometry

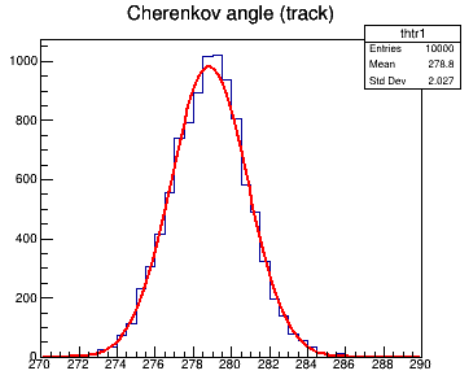
FTBF setup: hit map in a 2x2 HRPPD box

7 GeV/c pions (10000 tracks)





$\langle N_{pe} \rangle \sim 9.3$

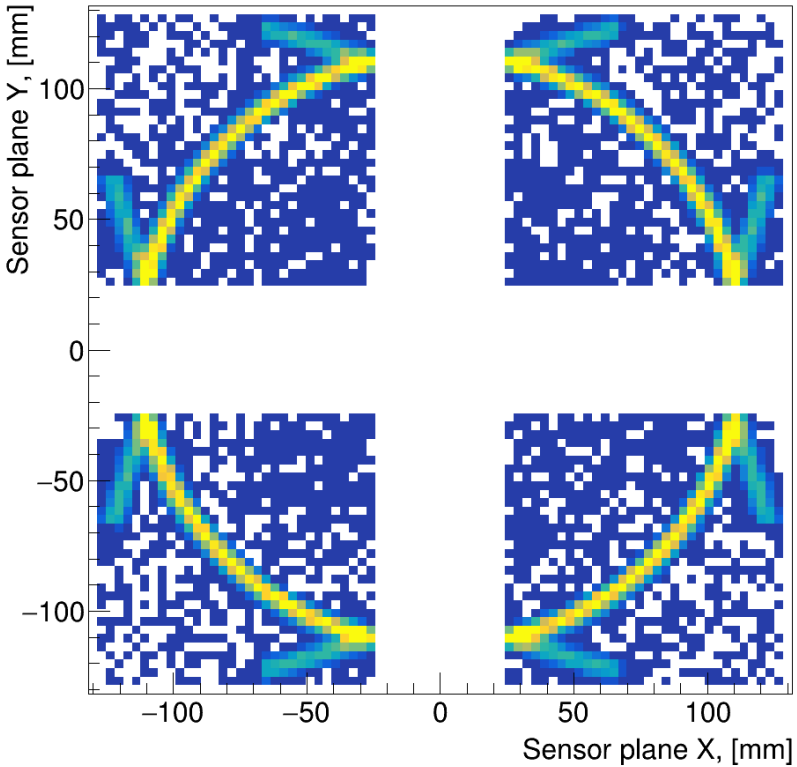


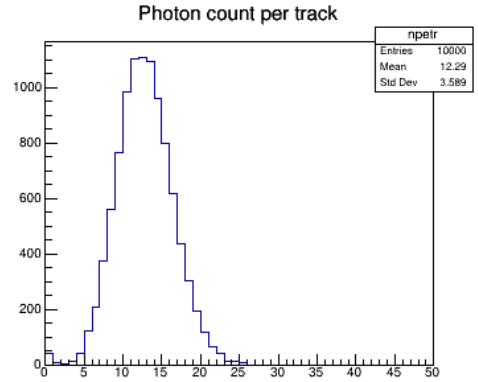
$\theta_{TR} \sim 2.0$ mrad

- Vessel length set to 450mm rather than 491mm (to better contain the light; see next slide)

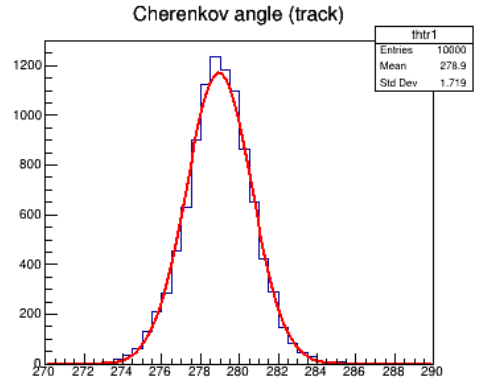
FTBF setup: hit map in a 2x2 HRPPD box

7 GeV/c pions (10000 tracks)





$\langle N_{pe} \rangle \sim 12.3$



$\theta_{TR} \sim 1.7$ mrad

- Same setup, with 90% reflective pyramid mirrors installed (~50mm x 50mm size would suffice)