FARICH
in SpdRoot 4.1.7

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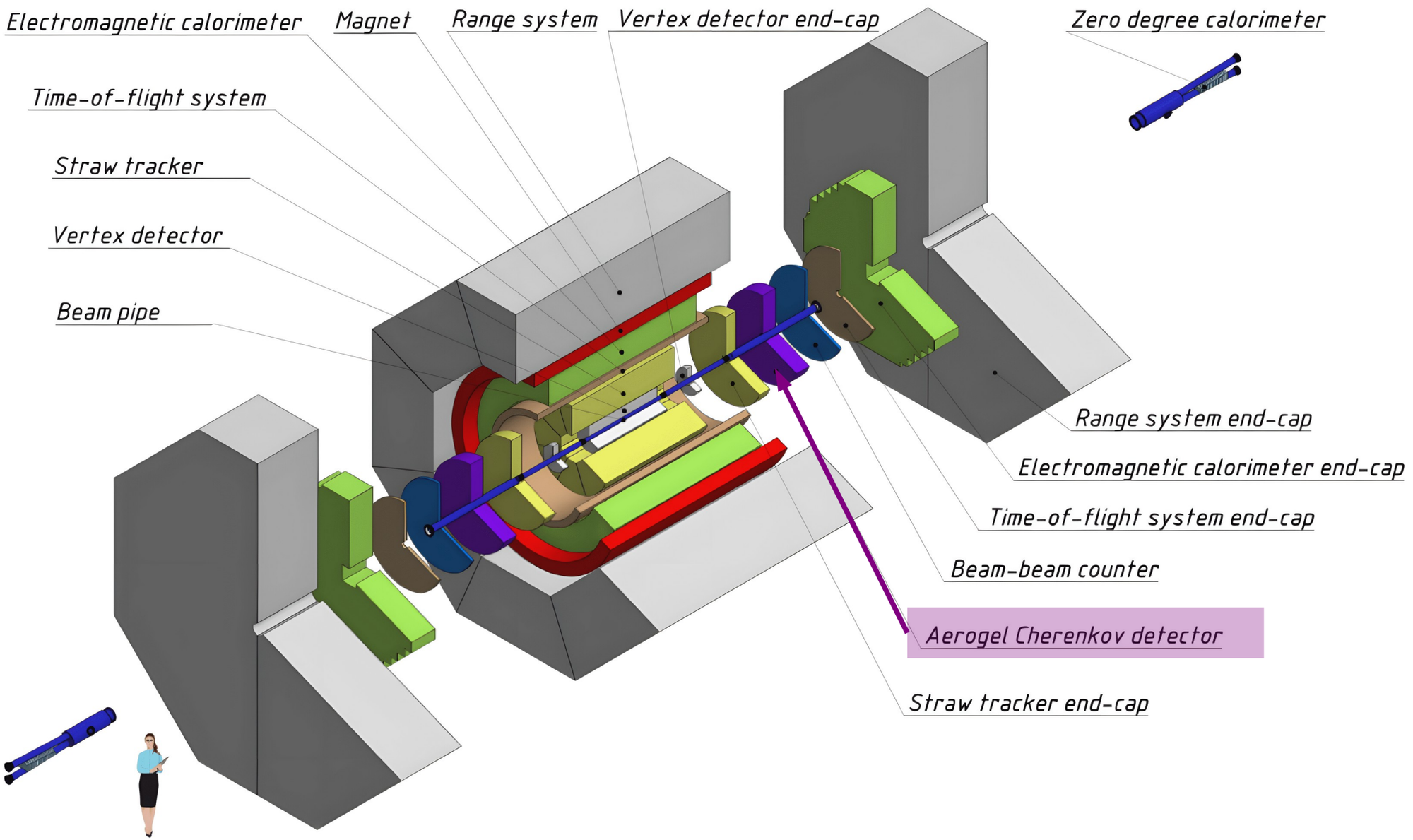
SPD Physics & MC meeting
22 January 2025

Focusing Aerogel RICH detector in SPD



FARICH in SpdRoot 4.1.7

Simulation

```
SpdFarich *farich = new SpdFarich();
run->AddModule(farich);
farich->setopticalphysics(true);
```

build FARICH detector

set optical physics (true/false)

Reconstruction

- *Create FARICH hits*

```
SpdFarichMCHitProducer *farich_hits_producer = new SpdFarichMCHitProducer();
Run->AddTask(farich_hits_producer);
```

- *Calculate Cherenkov angel and Likelihoods*

```
SpdMCFarichParticleProducer *mcfarich_part = new SpdMCFarichParticleProducer();
Run->AddTask(mcfarich_part);
```

FARICH in SpdRoot

Analysis

- *Setup parameters*

```
const TClonesArray *particles_farich = 0;
const TClonesArray *mc_farich_hits = 0;

IT->ActivateBranch("FarichParticles");
IT->ActivateBranch("FarichMCHits");

mc_farich_hits = IT->GetFarichHits();
particles_farich = IT->GetFarichParticles();
```

- *Values calculated from FARICH*

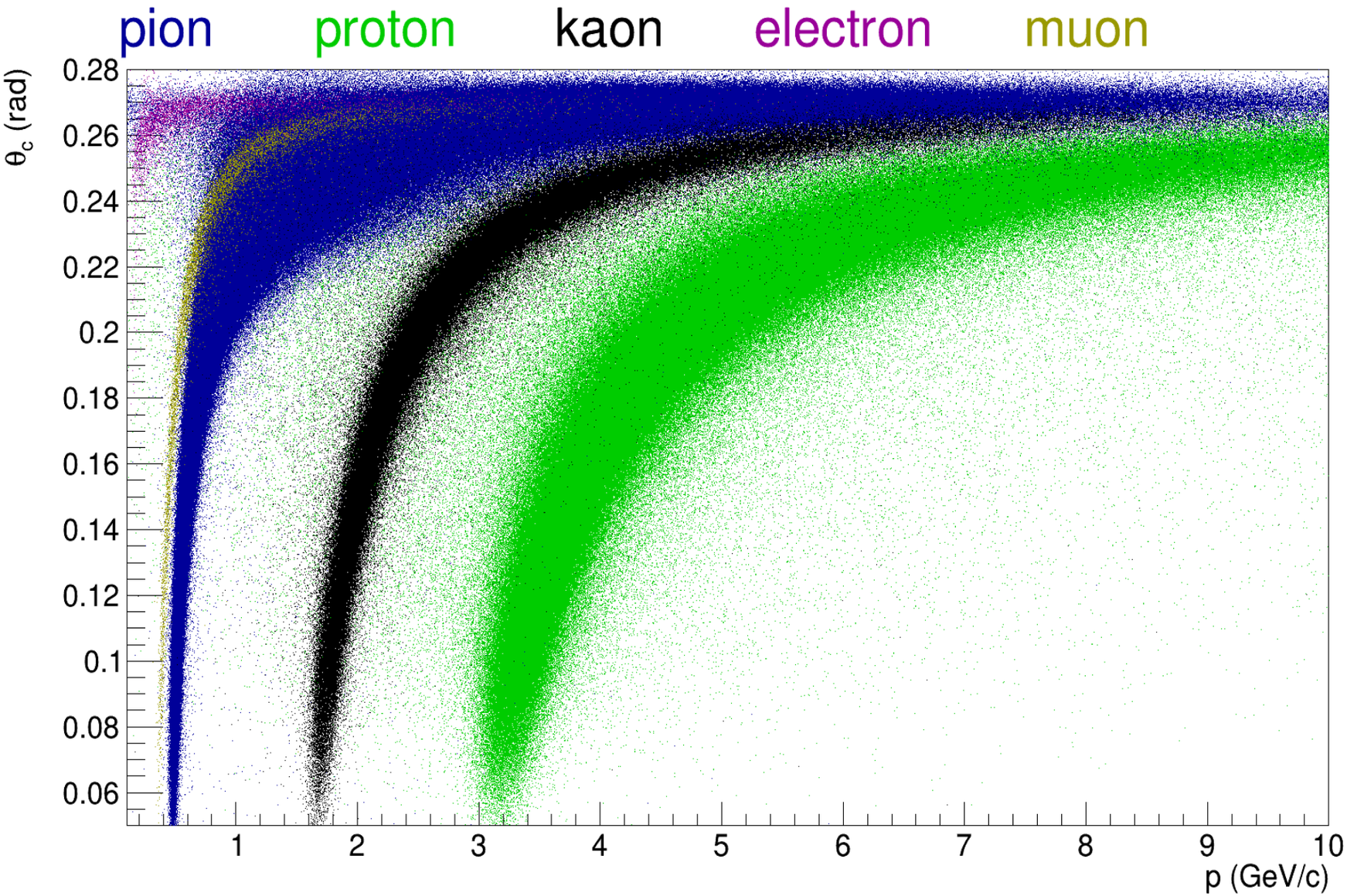
```
Int_t IdhitFarich = mcparticle->GetFarichParticleId();
if (IdhitFarich == -1) continue;

SpdFarichParticle *ffarichparticle = (SpdFarichParticle *)particles_farich->At(IdhitFarich);

double thetaC = ffarichparticle->GetThetaC();
double chi2ndfC = ffarichparticle->GetChi2ndf();
std::vector<double>  vLH  = ffarichparticle->GetLogLikelihoods();
```

Cherenkov angel θ_c from fit

Likelihoods for π,K,P

FARICH θ_c vs momentum

Based on */eos/nica/spd/users/iden/production/spdroot-4.1.7-dev-minbias-27 (~ 20 000 000)*



Conclusion

- FARICH is implemented in development version of SpdRoot.