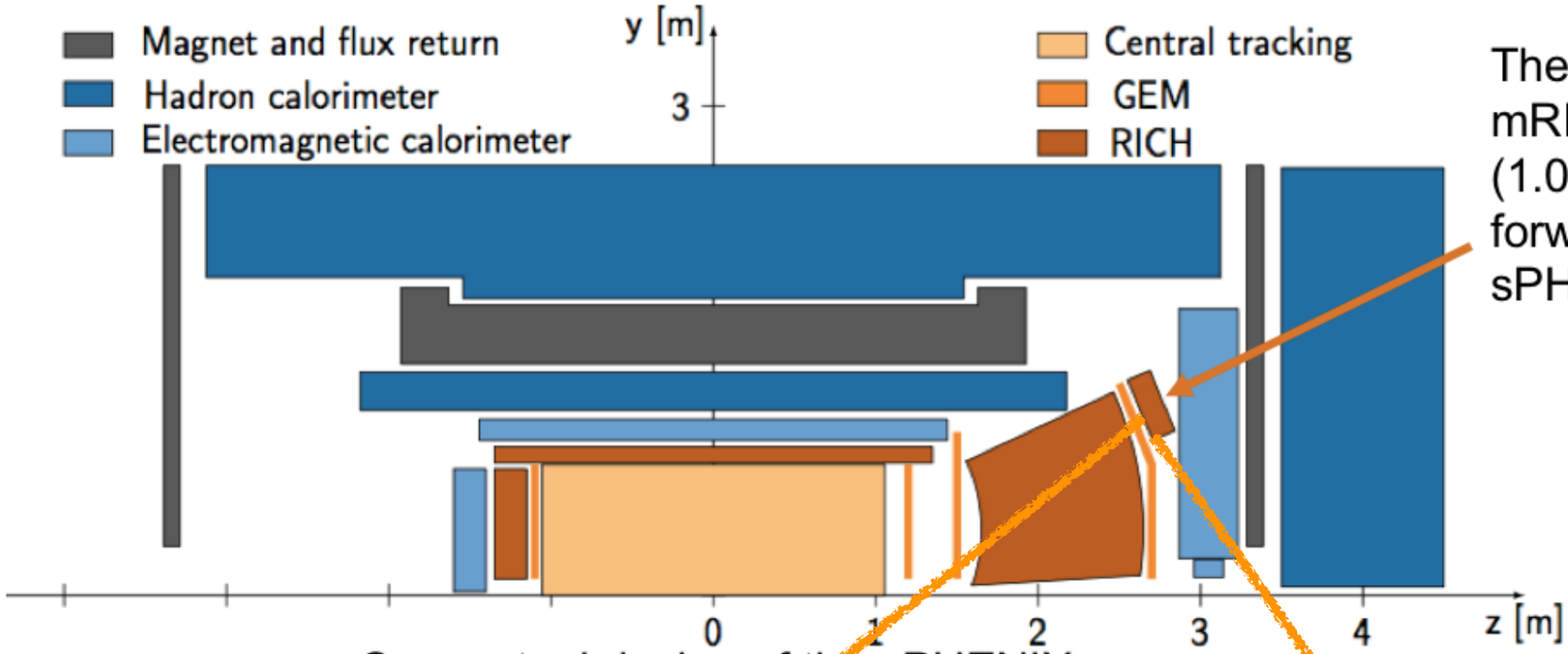
mRICH Simulation Update

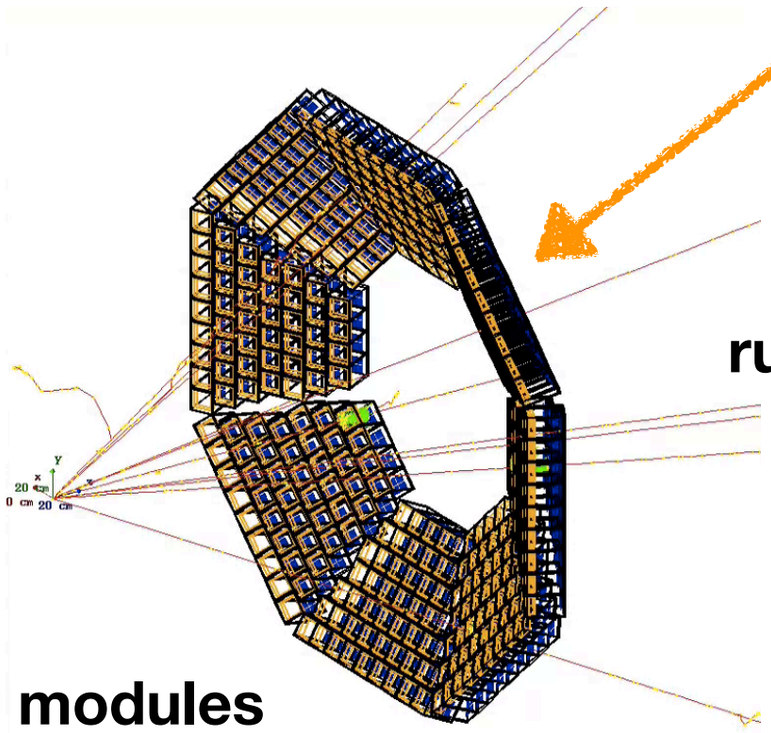
Xu Sun
Georgia State University

Current Status



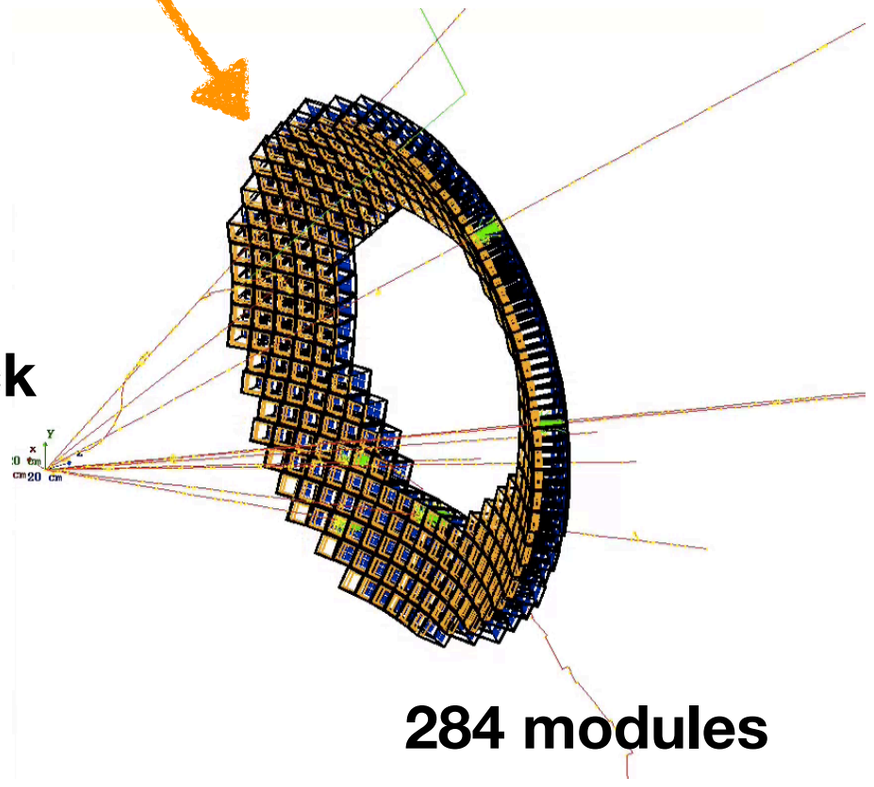
Conceptual design of the sPHENIX

The proposed mRICH coverage ($1.0 < y < 2.0$) in the forward region of sPHENIX.



340 modules

running overlap check



284 modules

Geometry with Calibration Utility

```
20 -1419.24 -386.537 2775.99 0.487263 -2.87569
21 -1419.24 -232.299 2793.13 0.47548 -2.97935
22 -1419.24 -77.4959 2801.7 0.469484 -3.08704
23 -1419.24 77.4959 2801.7 0.469484 3.08704
24 -1419.24 232.299 2793.13 0.47548 2.97935
25 -1419.24 386.537 2775.99 0.487263 2.87569
26 -1419.24 539.834 2750.3 0.504454 2.77812
27 -1419.24 691.817 2716.05 0.526566 2.68803
28 -1419.24 842.116 2673.27 0.55306 2.60607
29 -1419.24 990.366 2621.97 0.583406 2.53233
30 -1279.28 -1136.21 2634.82 0.575939 -2.41536
31 -1279.28 -990.366 2693.03 0.540969 -2.48281
32 -1279.28 -842.116 2743 0.509236 -2.55942
33 -1279.28 -691.817 2784.71 0.481301 -2.64585
34 -1279.28 -539.834 2818.12 0.457798 -2.74228
35 -1279.28 -386.537 2843.21 0.439388 -2.84816
36 -1279.28 -232.299 2859.94 0.426693 -2.96196
37 -1279.28 -77.4959 2868.31 0.420207 -3.08109
```

moduleID x y z theta phi

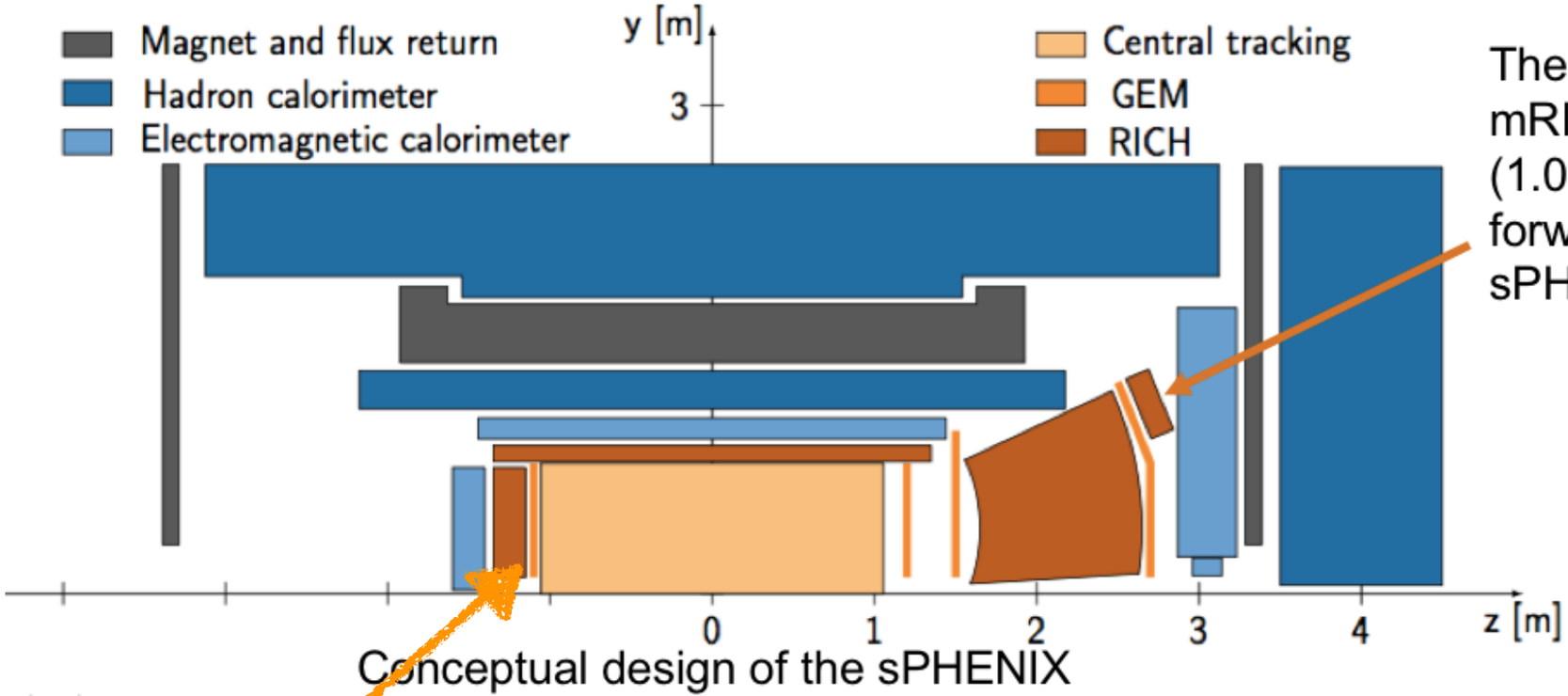
```
<string v="mRICH_wall_hside_20_position_x"/>
<Double_t v="-1419.2388186003379"/>
<string v="mRICH_wall_hside_20_position_y"/>
<Double_t v="-386.53702920188766"/>
<string v="mRICH_wall_hside_20_position_z"/>
<Double_t v="2775.9933522466681"/>
<string v="mRICH_wall_hside_20_rotation_phi"/>
<Double_t v="-2.875686979245307"/>
<string v="mRICH_wall_hside_20_rotation_theta"/>
<Double_t v="0.48726253291085303"/>
```

```
<string v="mRICH_wall_hside_20_moduleID"/>
<Int_t v="20"/>
```

calibrations/Prototype4/Geometry/mrich_0*.xml

- **Transfer external module map into an sPHENIX calibration utility**
- **macros can be found at calibrations/Prototype4/macros/Construct_mRICH_Param_2018.C**
- **Can be passed directly to Fun4All framework**
- **Will be pushed to github after overlap check**

Outlook



Conceptual design of the sPHENIX

The proposed mRICH coverage ($1.0 < y < 2.0$) in the forward region of sPHENIX.

- **Add mRICH wall on e-going side**
- **Develop parameterization for mRICH fast simulation**
- **Finish overlap check and converge code to github**

Thanks for your attention!