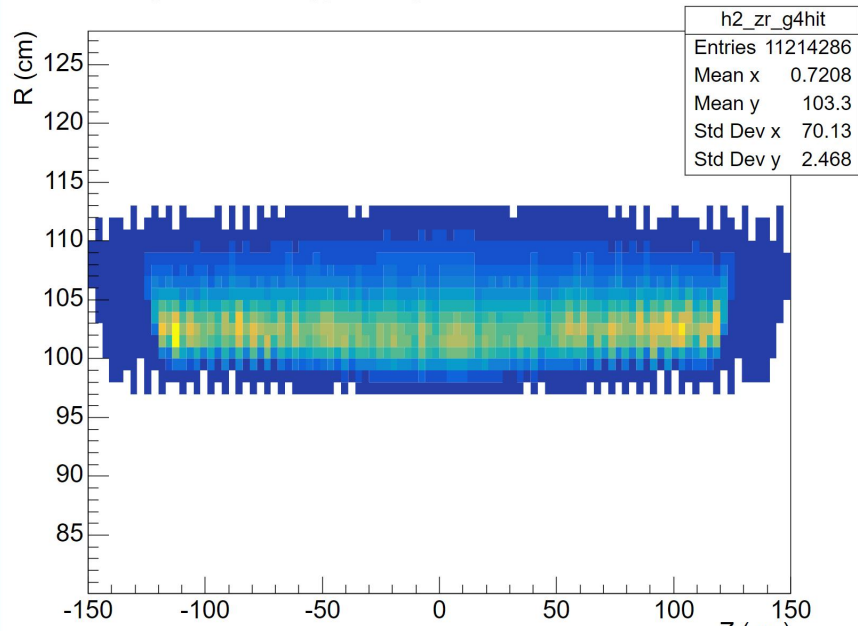


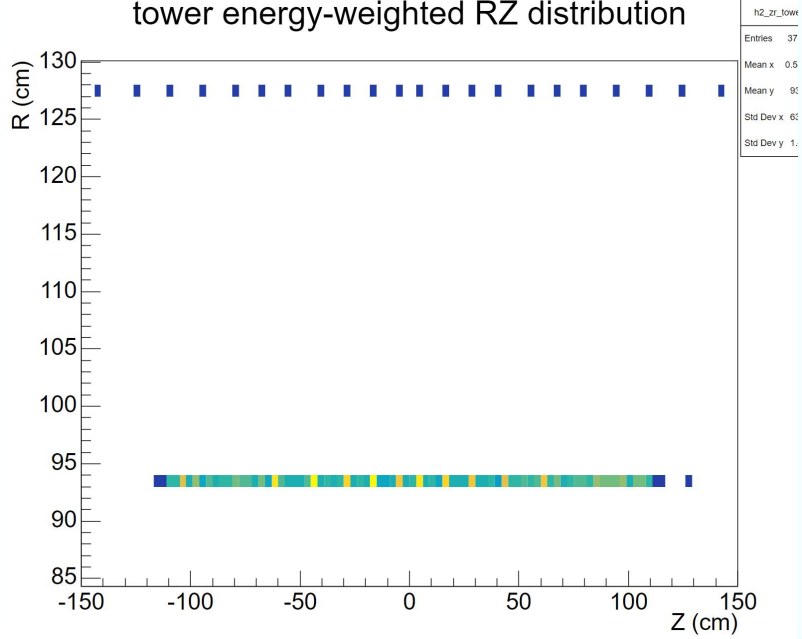
EMC pos modify

Jingyu

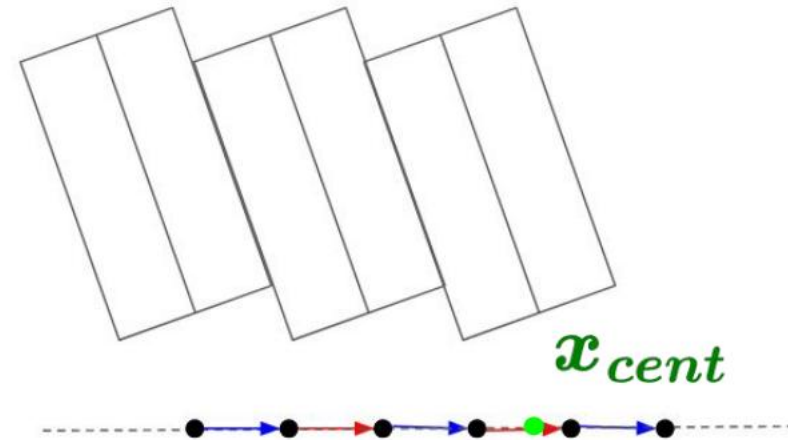
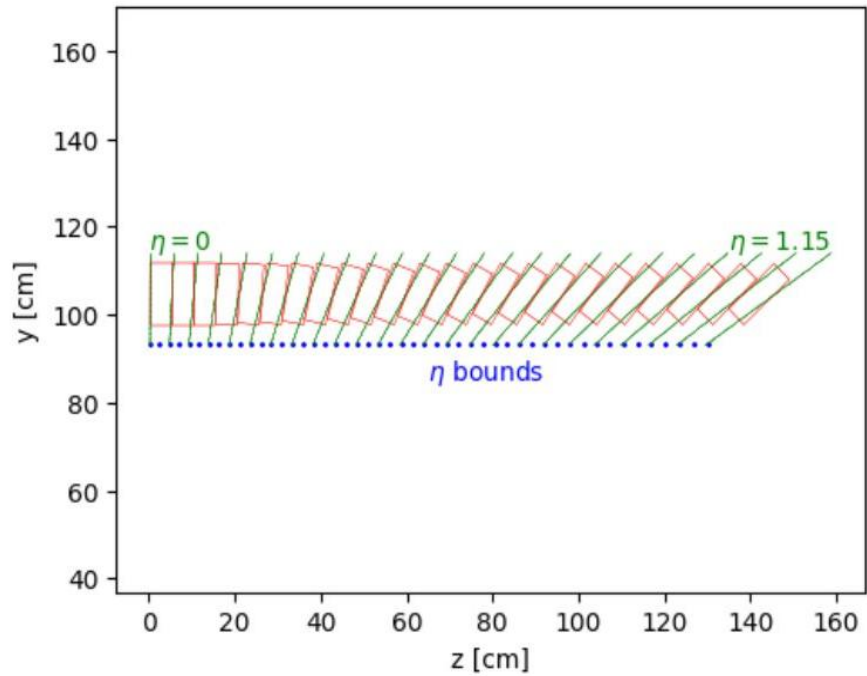
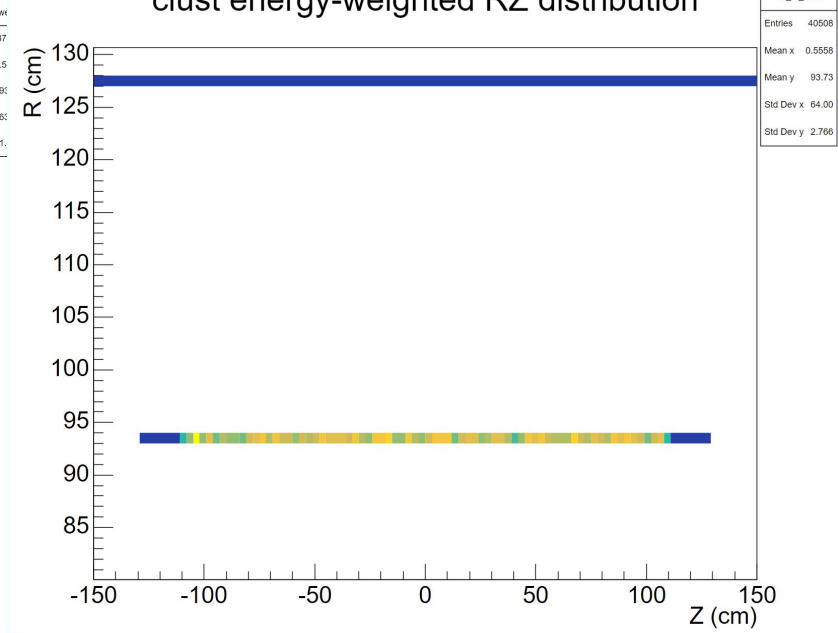
g4hit energy-weighted RZ distribution



tower energy-weighted RZ distribution



clust energy-weighted RZ distribution

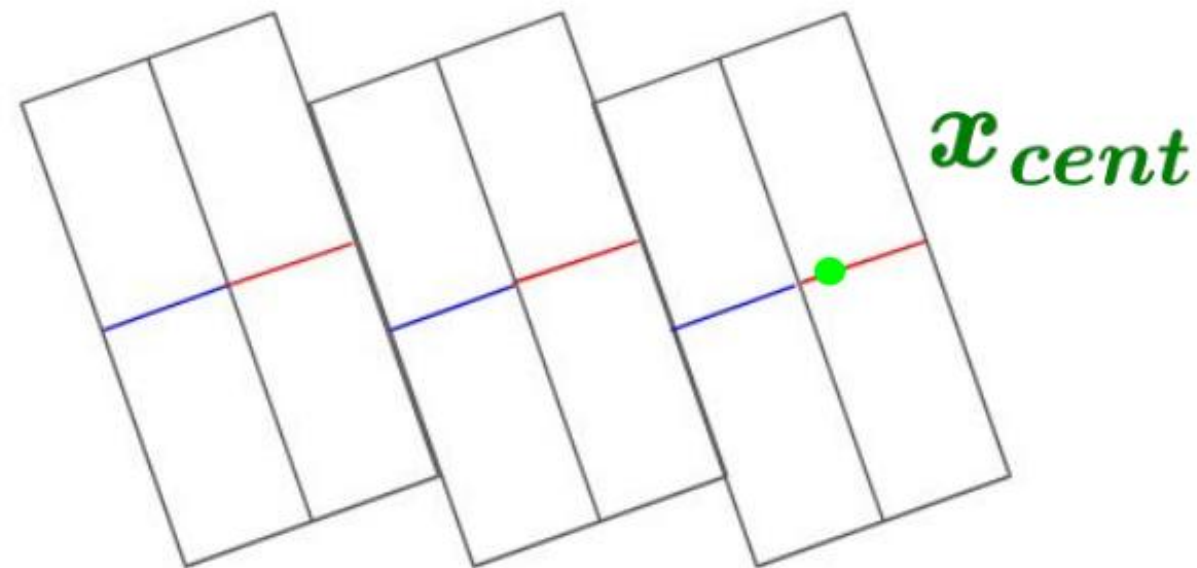
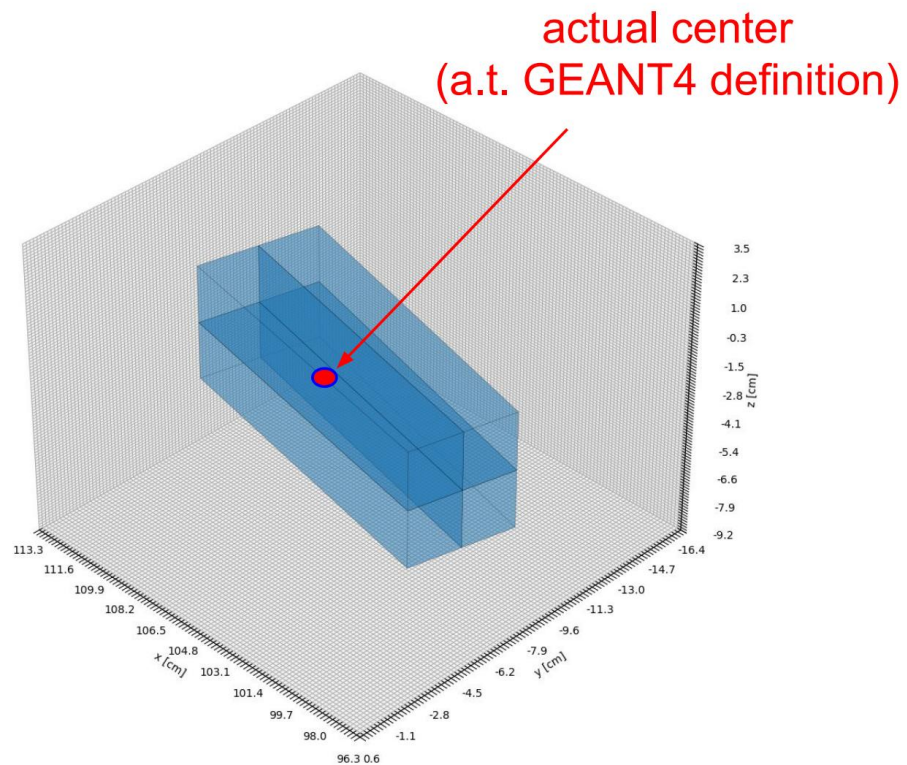


Modify geo from Virgile

Refined geometry -> read tower center directly from GEANT4 objects

Former geometry: Approximate center: projection at R = 93.5 cm

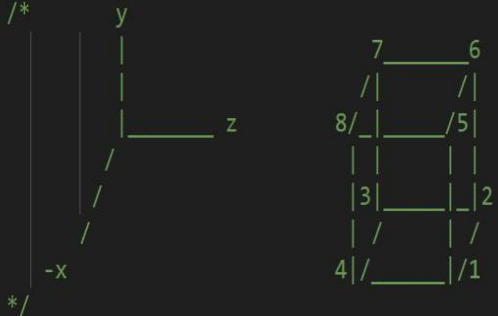
New geometry: actual tower center and individual rotation



CaloGeomMappingv2: create RawTowerGeomv5

```
void RawTowerGeomv5::set_vertices(const std::vector<double>& vertices)
```

```
{
```



```
if ((int) vertices.size() != _nVtx * 3)
```

```
{
    std::cerr
        << "RawTowerGeomv5::set_vertices - input " << vertices.size() << " vertices given. Expected 8 x 3." << std::endl;
    exit(1);
}
```

```
const bool face_outside[_nVtx] = {false, false, false, false, true, true, true, true};
const bool face_inside[_nVtx] = {true, true, true, true, false, false, false, false};
const bool face_low_eta[_nVtx] = {false, false, true, true, false, false, true, true};
const bool face_high_eta[_nVtx] = {true, true, false, false, true, true, false, false};
const bool face_low_phi[_nVtx] = {false, true, true, false, false, true, true, false};
const bool face_high_phi[_nVtx] = {true, false, false, true, true, false, false, true};
```

```
std::cout << "Geometry tower (" << ix << ", " << iy << "):\n";
std::cout << "center of tower: " << "("
    << towerg->get_center_x() << ", "
    << towerg->get_center_y() << ", "
    << towerg->get_center_z() << ")\n";
std::cout << "center of tower inner face: " << "("
    << towerg->get_center_int_x() << ", "
    << towerg->get_center_int_y() << ", "
    << towerg->get_center_int_z() << ")\n";
std::cout << "center of tower outer face: " << "("
    << towerg->get_center_ext_x() << ", "
    << towerg->get_center_ext_y() << ", "
    << towerg->get_center_ext_z() << ")\n";
std::cout << "center of tower lateral face (low phi): " << "("
    << towerg->get_center_low_phi_x() << ", "
    << towerg->get_center_low_phi_y() << ", "
    << towerg->get_center_low_phi_z() << ")\n";
std::cout << "center of tower lateral face (high phi): " << "("
    << towerg->get_center_high_phi_x() << ", "
    << towerg->get_center_high_phi_y() << ", "
    << towerg->get_center_high_phi_z() << ")\n";
std::cout << "center of tower lateral face (low eta): " << "("
    << towerg->get_center_low_eta_x() << ", "
    << towerg->get_center_low_eta_y() << ", "
    << towerg->get_center_low_eta_z() << ")\n";
std::cout << "center of tower lateral face (high eta): " << "("
    << towerg->get_center_high_eta_x() << ", "
    << towerg->get_center_high_eta_y() << ", "
    << towerg->get_center_high_eta_z() << ")\n";
```

code and compile

- `/sphenix/user/jzhang1/Virgikguide/CaloBase/RawTowerGeomv5.h`
- `/sphenix/user/jzhang1/Virgikguide/CaloBase/RawTowerGeomv5.cc`

- `/sphenix/user/jzhang1/Virgikguide/CaloReco/CaloGeomMappingv2.h`
- `/sphenix/user/jzhang1/Virgikguide/CaloReco/CaloGeomMappingv2.cc`
- `/sphenix/user/jzhang1/Virgikguide/cal_geom_mapping_exact.root`

- `/sphenix/user/jzhang1/Virgikguide/CaloReco/RawClusterBuilderTemplate.cc`

Compilation order:

CaloBase -> CaloReco -> Your analysis module (eg. physiTuto/tutorial)

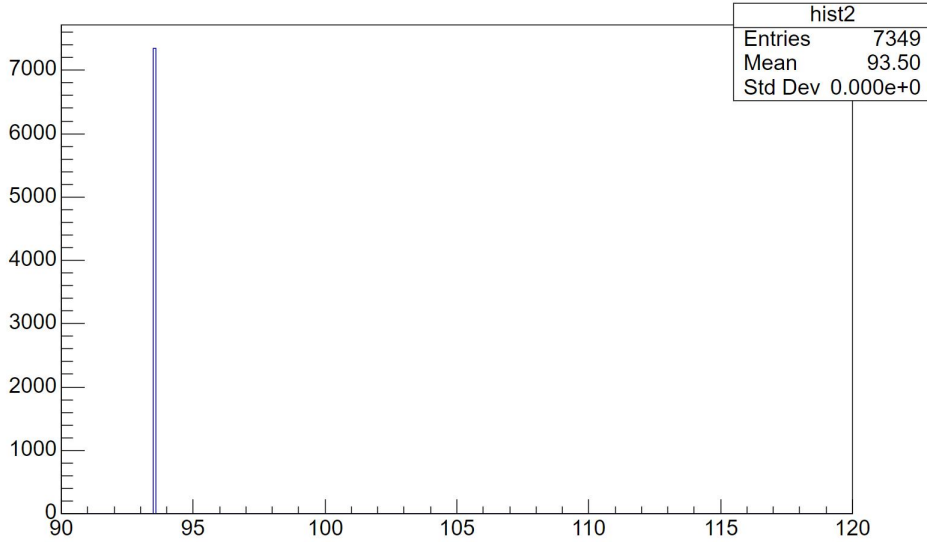
How to use the modify geo

- Fun4All_physiTuto.C :
- // Load the modified geometry
- CaloGeomMappingv2 *cgm = new CaloGeomMappingv2();
- cgm->set_detector_name("CEMC");
- cgm->setTowerGeomNodeName("TOWERGEOM_CEMCv3");
- se->registerSubsystem(cgm);

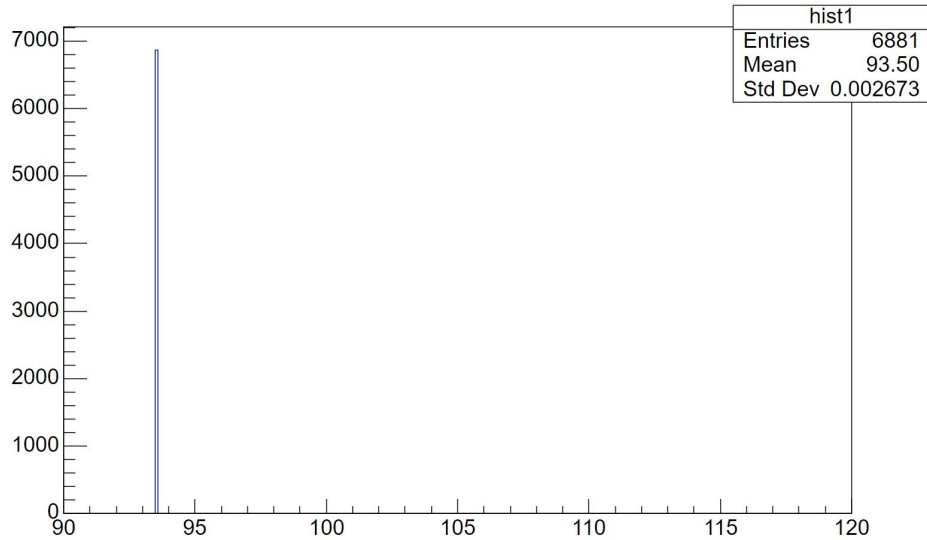
- tutorial:
- geomEM = findNode::getClass <RawTowerGeomContainer> (topNode, "TOWERGEOM_CEMCv3");

before modify:

tower_R

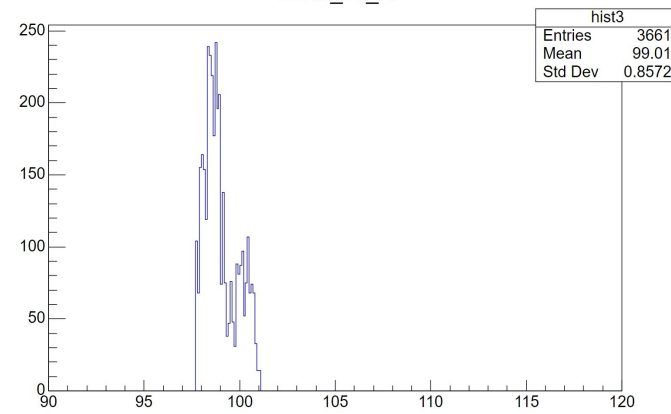


caloClus_R



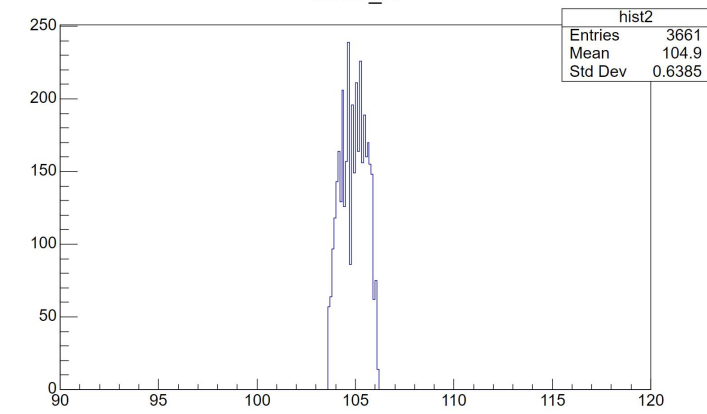
after modify:

tower_int_R



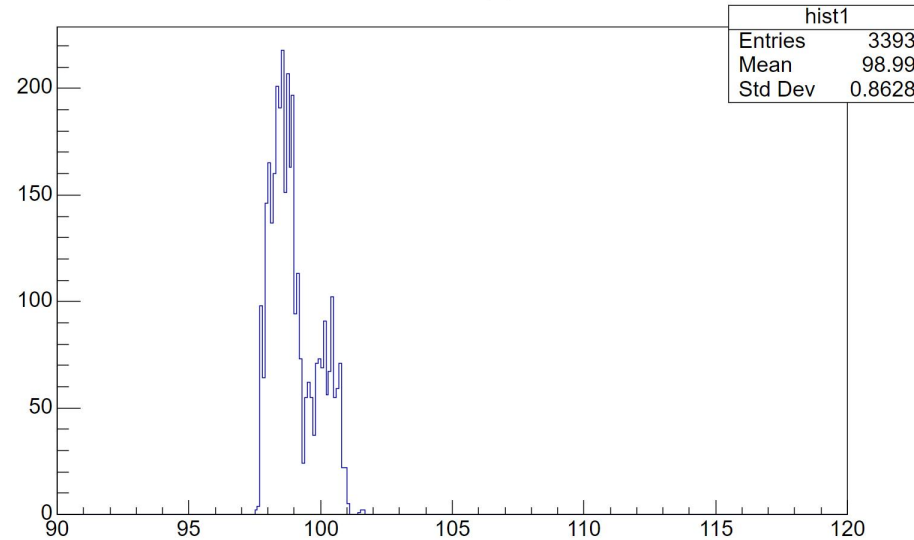
inner face

tower_R



center

caloClus_R



Thanks for listen