

# MicroMegs : Strange Behaviour in Vertex Reconstruction

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# Reconstructed Primary Vertex Positions

MinBias events generated with  $\sigma_z = 30$  cm

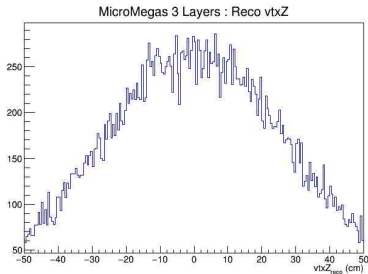


Figure 1: Primary vertex Z with MicroMegas 3 super layers

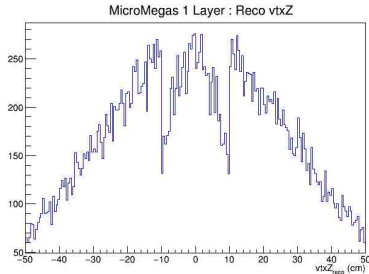


Figure 2: Primary vertex Z with MicroMegas 1 super layer

strange symmetric dips in reconstructed event vertex Z at  $\sim 10$  cm for one layer MM

# Further Details

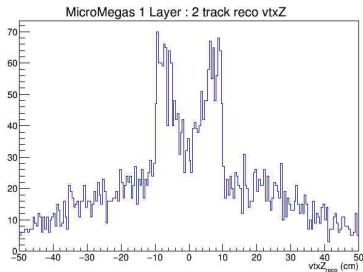


Figure 3: 2 tracks

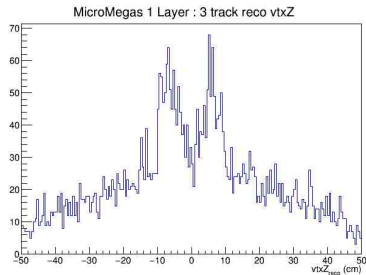


Figure 4: 3 tracks

excess of low multiplicity events around 10 cm?

# Further Details

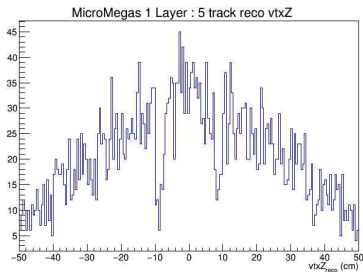


Figure 5: 5 tracks

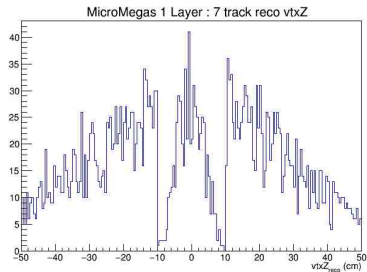


Figure 6: 7 tracks

higher multiplicity events revert back to the overall strange dip at around 10 cm

# Custom MVD Code Snippet

`geo_type = 1` is three layers and `geo_type = 3` is one layer MicroMegas

```
void CustomMvd(Int_t geo_type)
{
    if (geo_type < 1) return;

    SpdMvdGeoMapper* mapper = SpdMvdGeoMapper::Instance();
    if (geo_type == 1) { mapper->SetGeoType(1); return; }
    if (geo_type == 2) { mapper->SetGeoType(2); return; }
    mapper->SetGeoType(3);
    mapper->ClearGeometry();

    // BUILD LAYERS
    Int_t l0, l1;
    l0 = mapper->DefineLayer(5.0, 80.0);
    mapper->SetLayerActivity(l0, true);
    mapper->AddSublayer(l0, 0.01750, "FR4");
    mapper->AddSublayer(l0, 0.00190, "copper");
    mapper->AddSublayer(l0, 0.01350, "kapton2");
    mapper->AddSublayer(l0, 0.40000, "argon");
    mapper->AddSublayer(l0, 0.00055, "copper");
    mapper->AddSublayer(l0, 0.02400, "kapton2");
    l1 = mapper->DefineLayerCopy(l0, 5.5);
    l1 = mapper->DefineLayerCopy(l0, 6.0);
}
```

If you notice something wrong in the code, please let me know