Subject: Re: box generator
Posted by Pablo Genova on Mon, 21 May 2007 07:54:08 GMT
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Hi Stefano and Alicia,

one warning on the box generator: is it really uniform in theta? As Kasha and Felice Iazzi
noticed the p components are generated uniformly in phi and in theta,
not uniformly in phi and cos(theta).

Do you agree that there is something strange?

ciao, Pablo

The code is the following from CmbBoxGenerator.cxx:

```
// Generate particles
  for (Int_t k = 0; k < fMult; k++) {
    phi = gRandom->Uniform(fPhiMin,fPhiMax) * TMath::DegToRad();

    if     (fPRangeIsSet ) pabs = gRandom->Uniform(fPMin,fPMax);
    else if (fPtRangeIsSet) pt   = gRandom->Uniform(fPtMin,fPtMax);

    if     (fThetaRangeIsSet) {
     theta = gRandom->Uniform(fThetaMin,fThetaMax) * TMath::DegToRad();
    }
    else if (fEtaRangeIsSet) {
     eta   = gRandom->Uniform(fEtaMin,fEtaMax);
     theta = 2*TMath::ATan(TMath::Exp(-eta));
    }
    else if (fYRangeIsSet) {
     y     = gRandom->Uniform(fYMin,fYMax);
     mt = TMath::Sqrt(fPDGMass*fPDGMass + pt*pt);
     pz = mt * TMath::SinH(y);
    }

    if (fThetaRangeIsSet || fEtaRangeIsSet) {
     if     (fPRangeIsSet ) {
pz = pabs*TMath::Cos(theta);
pt = pabs*TMath::Sin(theta);
     }
     else if (fPtRangeIsSet)
pz = pt/TMath::Tan(theta);
    }

    px = pt*TMath::Cos(phi);
    py = pt*TMath::Sin(phi);

    if (fBoxVtxIsSet) {
     fX = gRandom->Uniform(fX1,fX2);
     fY = gRandom->Uniform(fY1,fY2);
    }
```