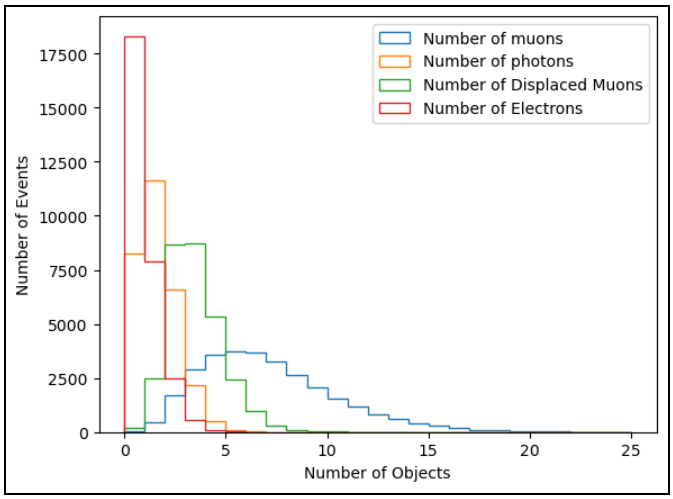
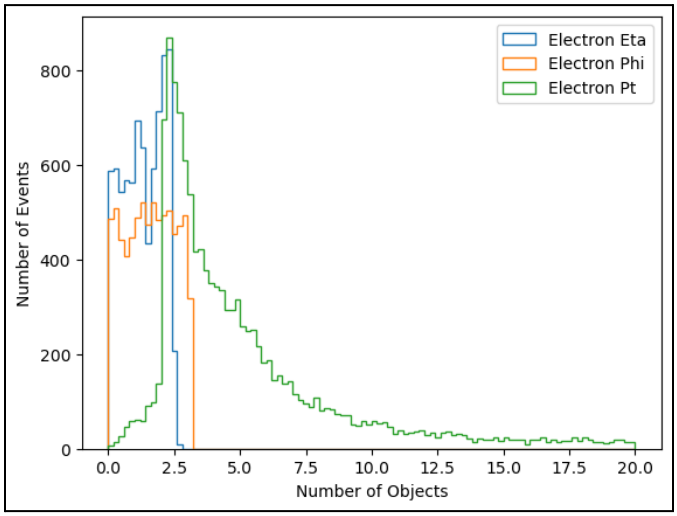
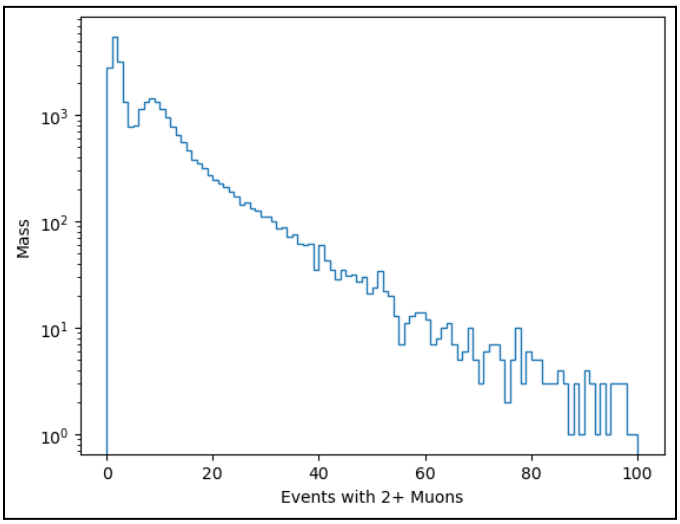


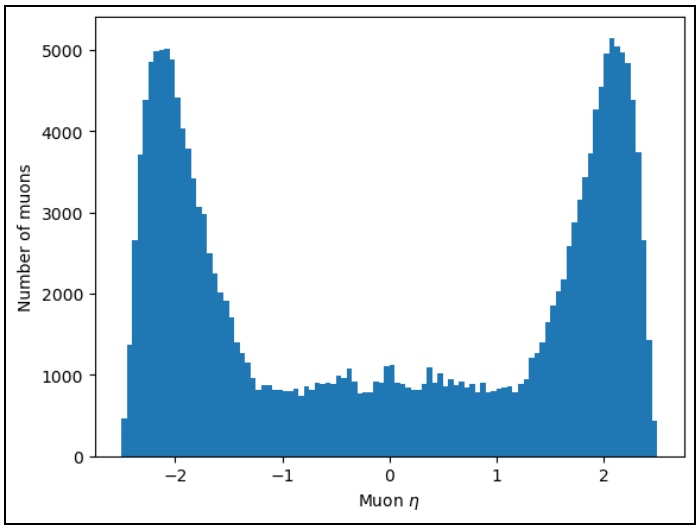
This plot displays simply the number of muons, photos, electrons and displaced muons in an event. The displaced muons are significant because, as we talked about earlier in the year, the possibility of dark matter being found in proton-proton collisions, which decay into a pair of muons. These muons will appear displaced after the collision and decay.

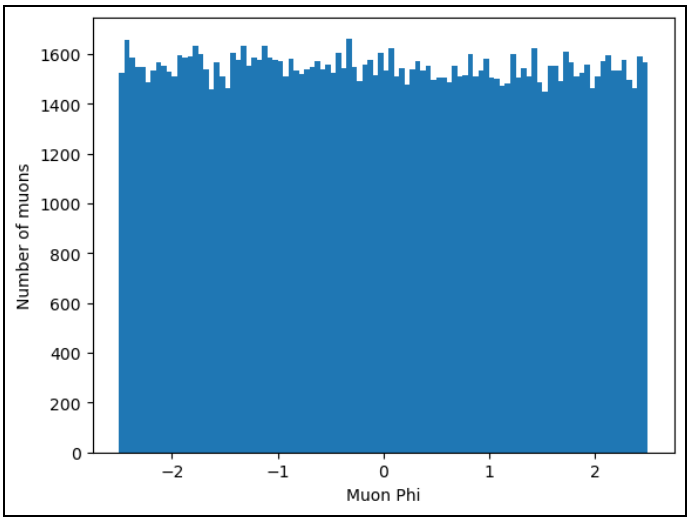


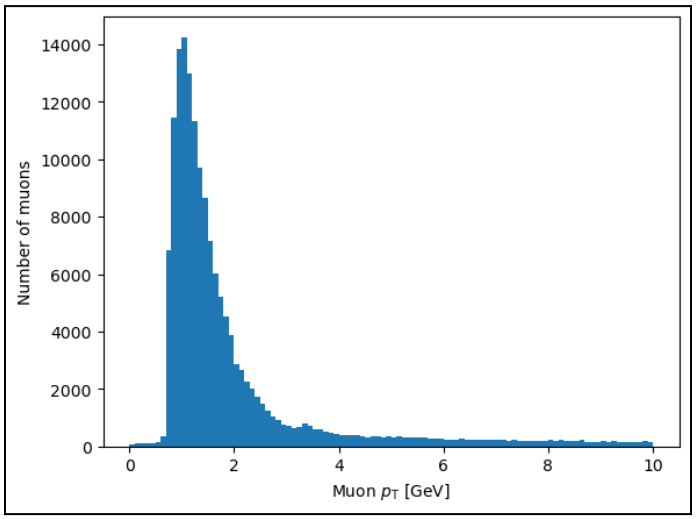
As elaborated on below, the electron pt, eta and phi describe the way in which we can describe the location and momentum of a particle. The phi is the angle off the beam (azimuth) while the pt and eta are ways to describe the particle's location.



In this plot I used a mask to limit the display to events with more than 2 muons. This is again important because it allows you to look at the events where a proton-proton collision decays into two muons. Putting masks on data allows you to focus on specific criteria or more “important” information. This also allows a drastic cut in data as billions of events are recorded through the collisions, and only a few are selected, such as ones with missing momentum.







I grouped these three plots together because they are just plotting pt, eta, and phi of muons separately. But here you can better see their characteristics. Pt is the momentum of the muons, while the location of the muons is described by the eta and phi coordinates. Phi remains fairly constant because it is the angle on the plane where it leaves the detector, and gravity is negligible, which results in a level plot. Pt is the component of momentum in the transverse plane. While eta, or pseudorapidity is the angle of the muons relative to the beam axis.