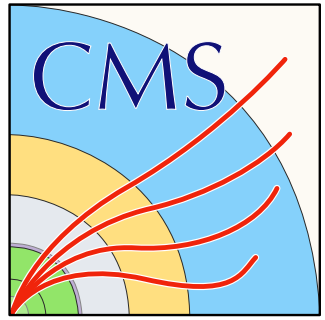
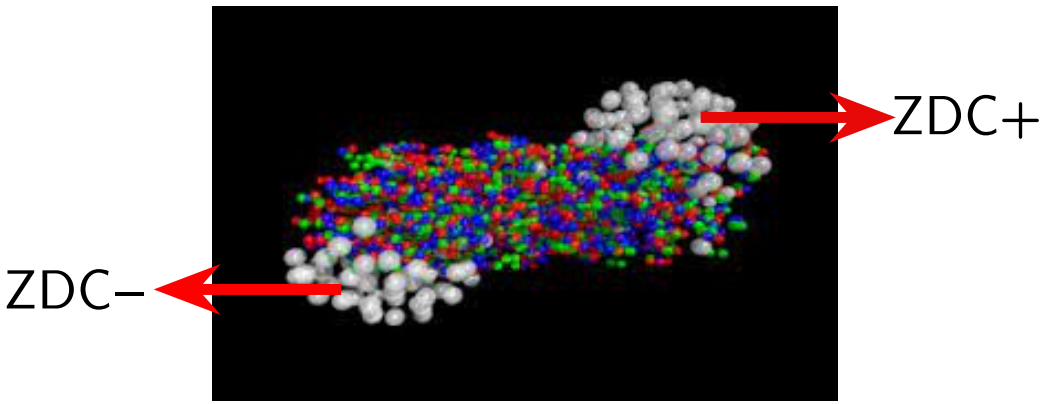
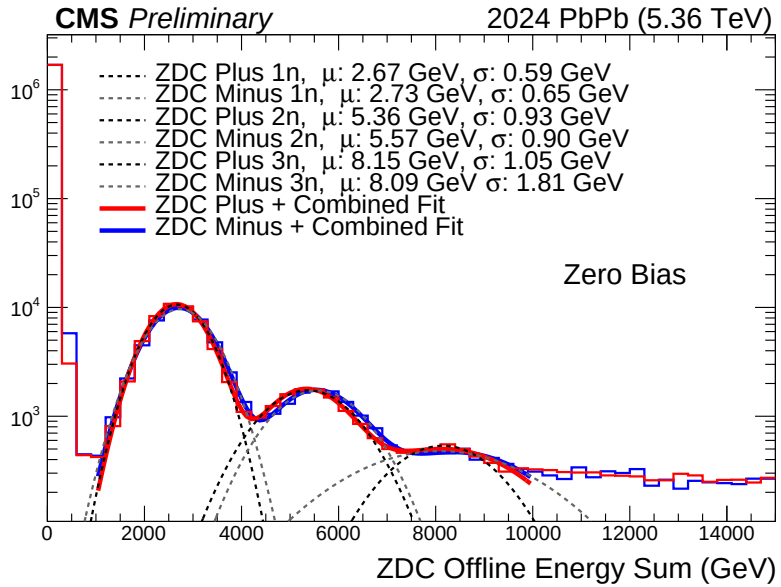
Motivation and physics behind the ZDC



- heavy-ion collisions: centrality connected to spectator neutrons
- ZDC classifies events based on neutron emission
- different neutron emission = different classes of ultra-peripheral events
- UPC: large impact parameter, no hadronic interactions
- photon-ion and photon-photon collisions





The CMS ZDC detector

- measures spectator neutrons and photons
- sampling calorimeters 140 m from CMS
- tungsten plates and quartz fibers
- EM and HAD sections: photons and neutral hadrons
- RPD: event plane for flow measurements