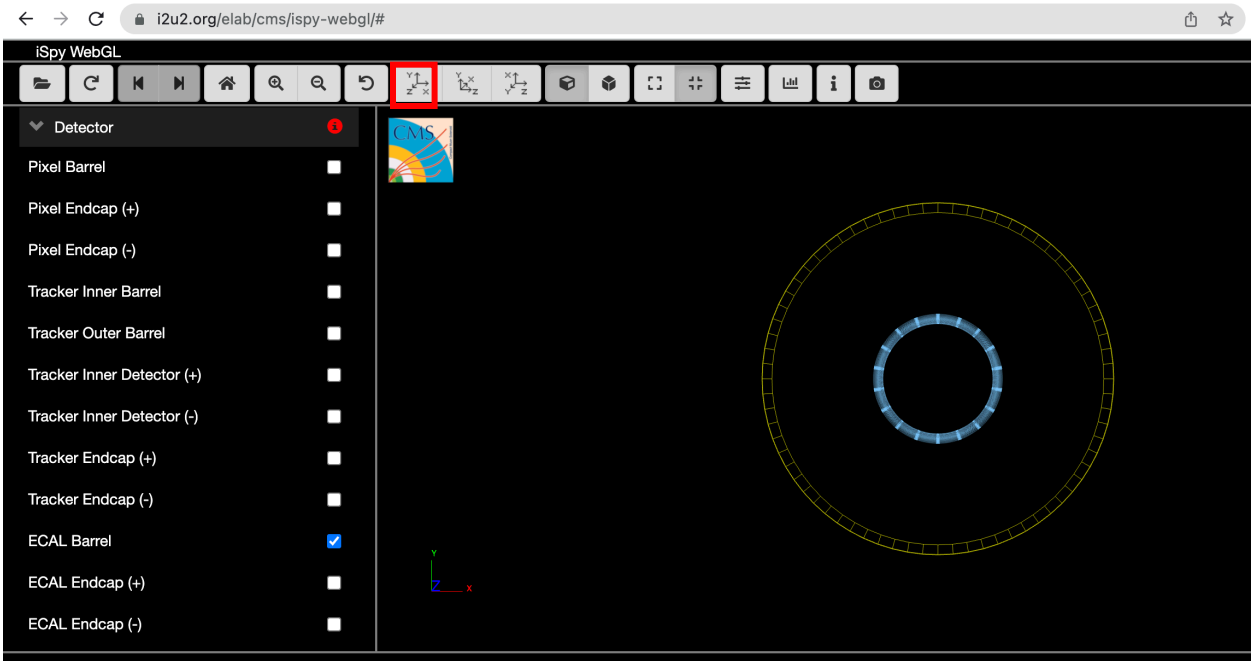
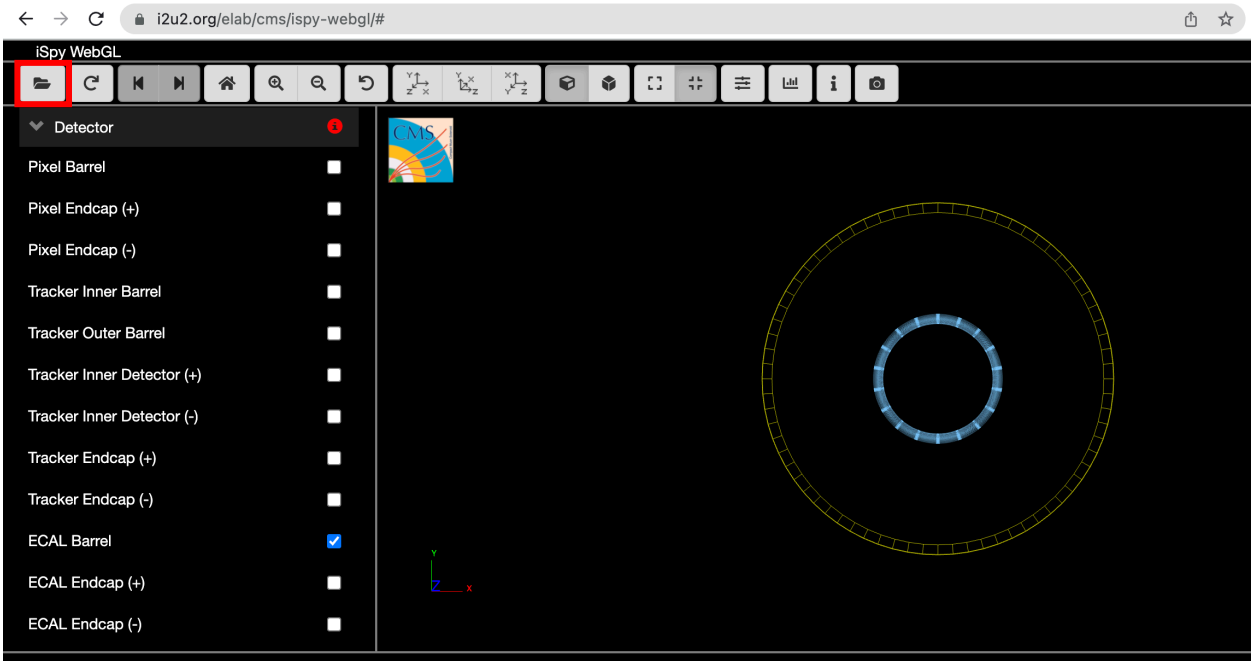
Instructions for analyzing CMS Events

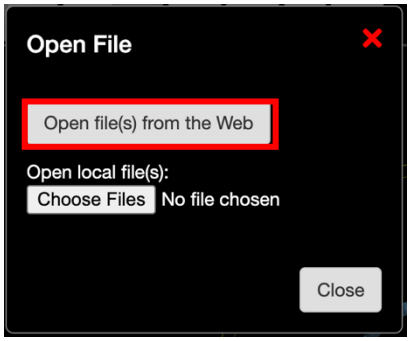
1. Open https://www.i2u2.org/elab/cms/ispy-webgl/
2. Click on the XYZ button shown in red below to place the display in standard mode



3. Open the data files by clicking on the folder icon shown below

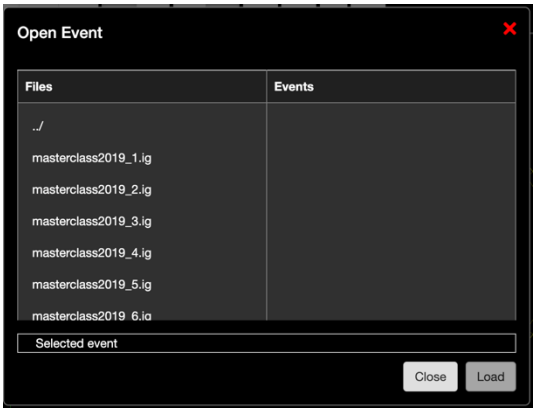


4. You should see a dialog box similar to the one shown below. Choose "*Open file(s) from the Web*"

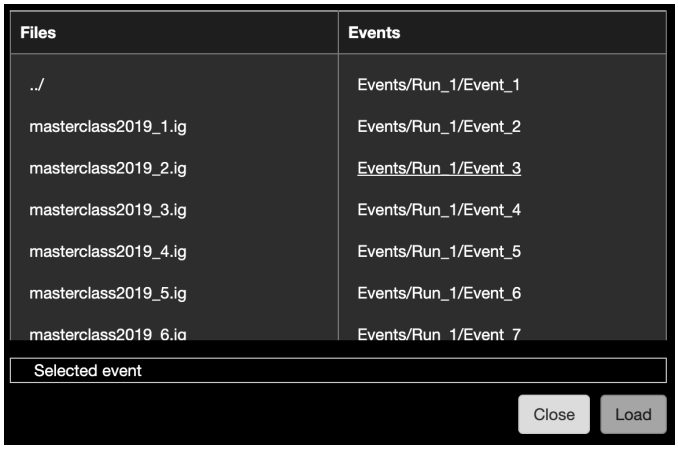


5. Then click on the data series you were assigned (**N50**)

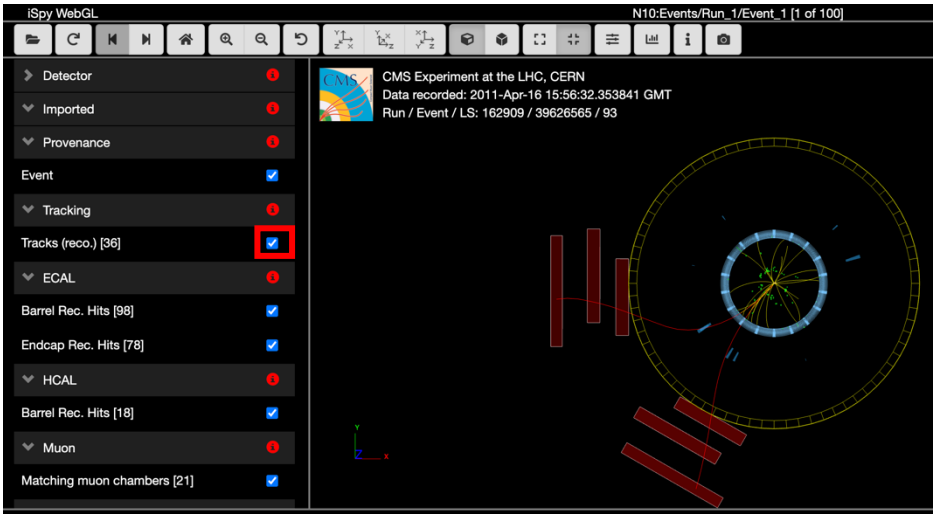
6. The screen should change immediately to the screen shown to the right. Your data set should be named masterclass2019_***n***.ig when ***n*** is your group's data set number. Scroll down if necessary and then click on your dataset.



7. Choose the Event (likely **1** or **50**) that you are starting with and then click "Load".



8. When your data loads, de-select the "Tracks (reco.)" checkbox shown.



9. When we view particle tracks in the standard view that we selected earlier:

Positively charged (+) particles curve clockwise

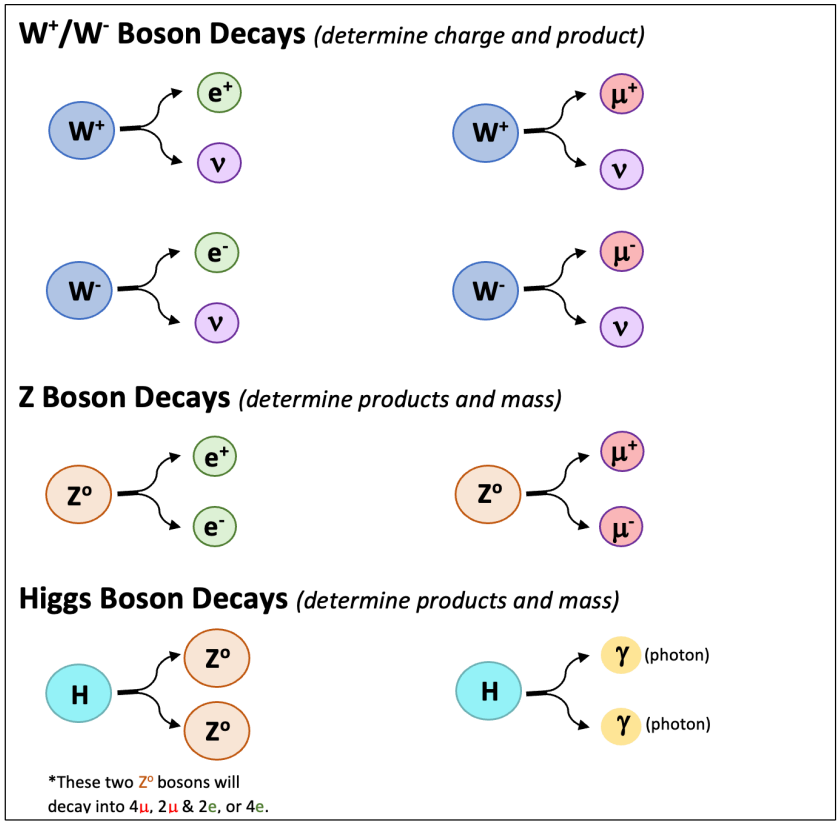
Negatively-charge (-) particles curve anticlockwise (counterclockwise)

10. When the particles decay the computers will detect the particles as they move through the detector. The computer assigns each particle its own color: RED = muon (μ), GREEN = electron (e), and LIGHT PURPLE = missing momentum (ν).

11. The W, Z, and Higgs bosons decay too quickly to see in the detector, but we can use the table on the right to infer the original (or primary) particle.

12. The curvature of the tracks will enable us to determine their charges.

13. Once you inferred the primary particle, you will enter your data into CIMA, on online data collection document.

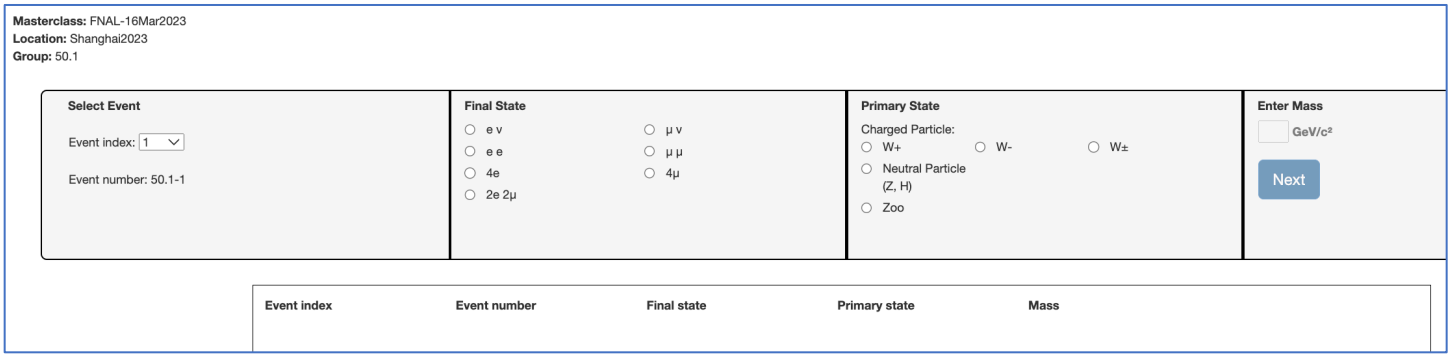


Entering data into CIMA

14. In another tab in your browser, open https://www.i2u2.org/elab/cms/cima-wzh/

15. You will find this year's Masterclass listed under **FNAL-16Mar2023**. Then go to the next column and choose the location as **Shanghai2023.** Then select the Data Set that you were assigned.

16. You should see a screen similar to the one shown below.



17.