# World Wide Data Day

W2D2_18

Summary

Ottawa High School physics students participated in a data analysis event in collaboration with students at approximately 77 different locations around the world. The OHS involvement included two days of data analysis and some time spent learning about particle detectors and how the events analyzed in this event were detected and recorded. At the conclusion of the event, we participated in a videoconference to discuss our results and hear from others and experts about particle physics.

Other schools participating in the videoconference included Prepa Ibero, Mexico City, Mexico, and Saint Joseph High School, South Bend Indiana. Ken Cecire of Notre Dame and Fermilab attended, and our other physics experts in the VC were Jeremy Wegner of Winamac Community High School in Winimak, Indiana, and Prof. Sudhir Malik of the University of Puerto Rico at Mayaguez. Several students remained to participate in the videoconference beyond the end of the school day, including: Chad Bones, Tucker Mace, Caroline Weber, Collin Hanson, and Regan Fogle.
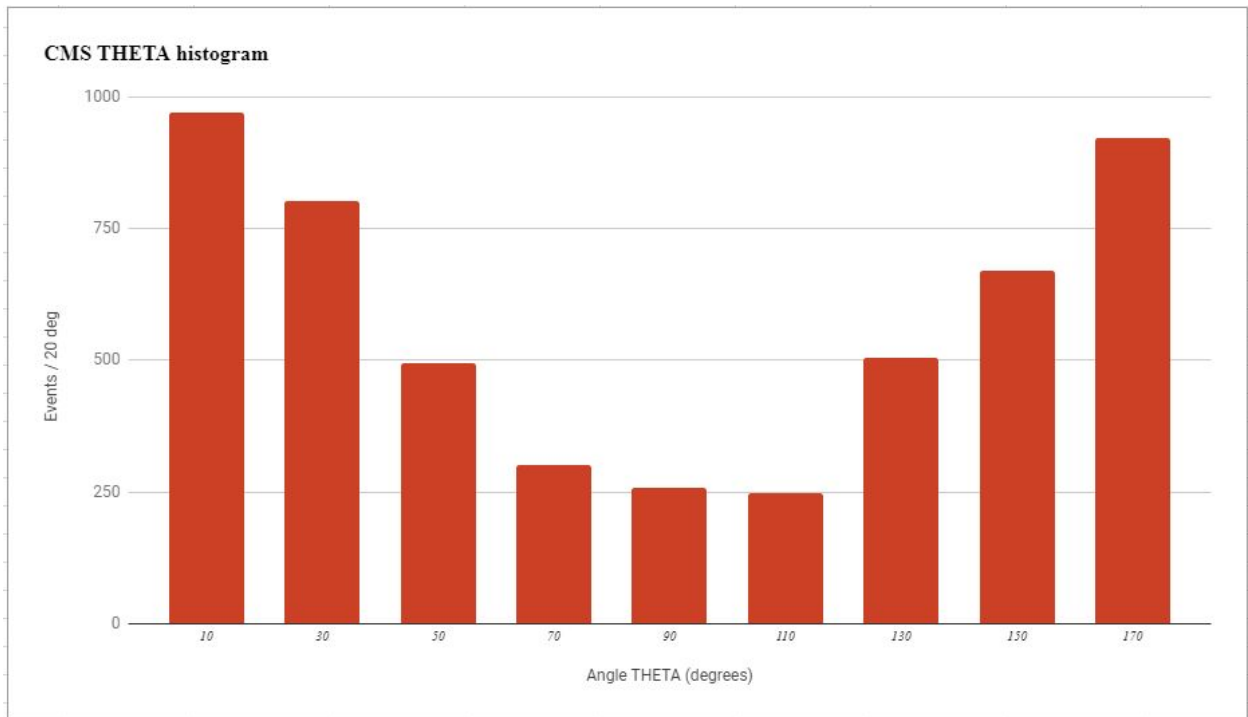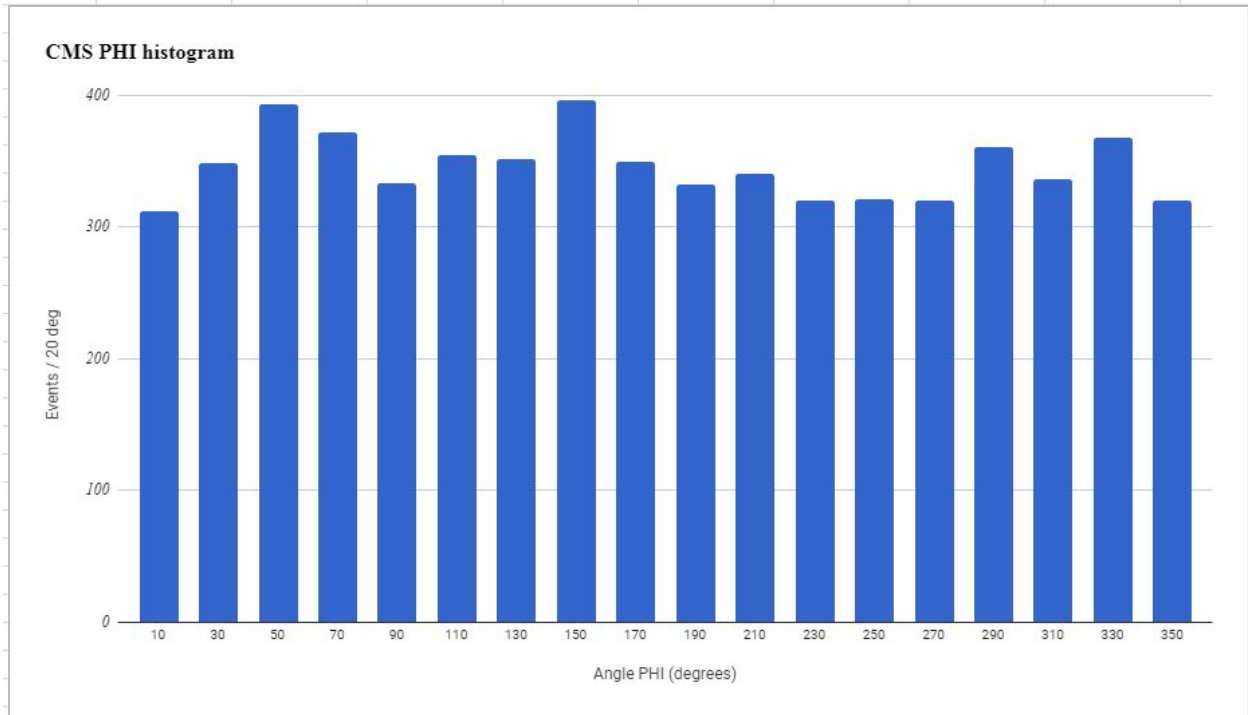
Ottawa students analyzed approximately 650 events from the [CMS](#)data set, identifying and measuring 147 dimuon events, which were the target of this particular investigation.

A comparison of the Ottawa and International Collaboration results shows that even with a relatively small number of events, Ottawa's measurements are consistent with the trends shown in the collaboration analysis.
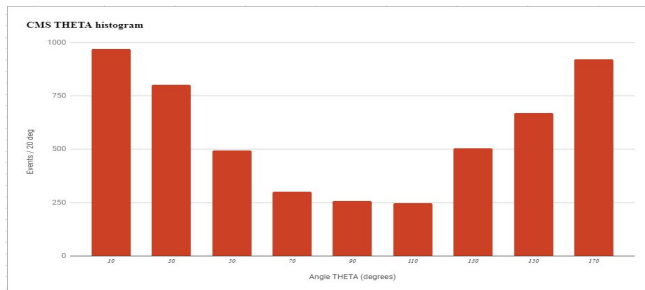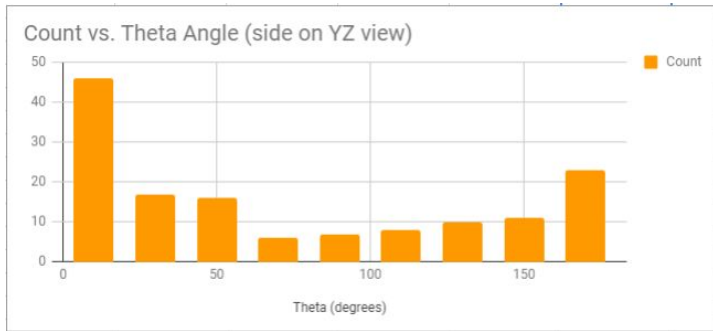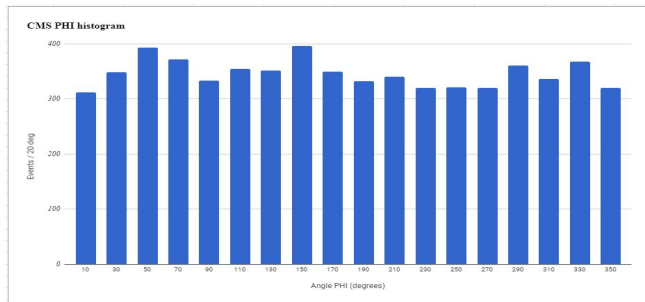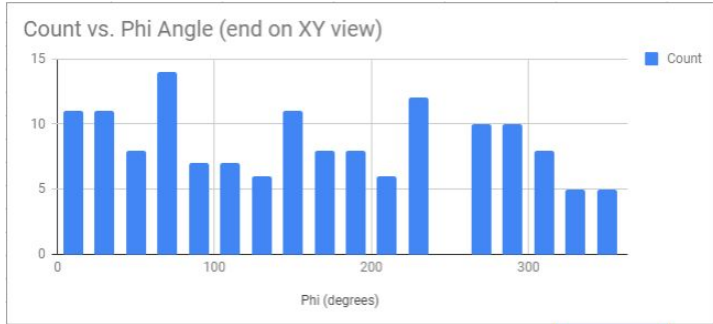
Ottawa Local Results

Count vs. Phi Angle (end on XY view)

Count vs. Theta Angle (side on YZ view)
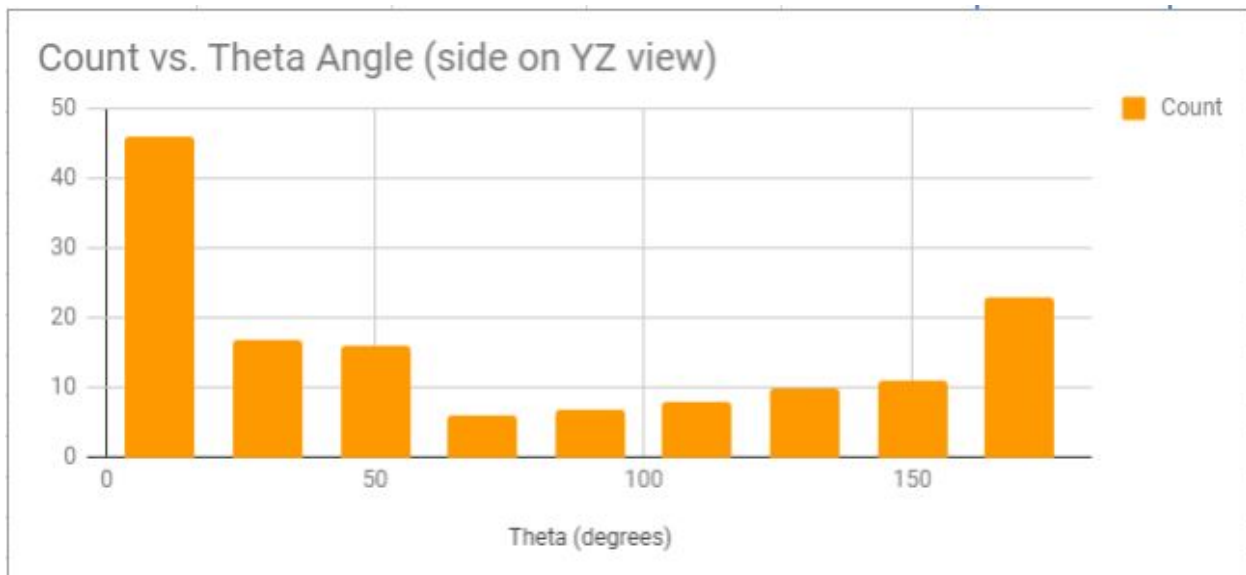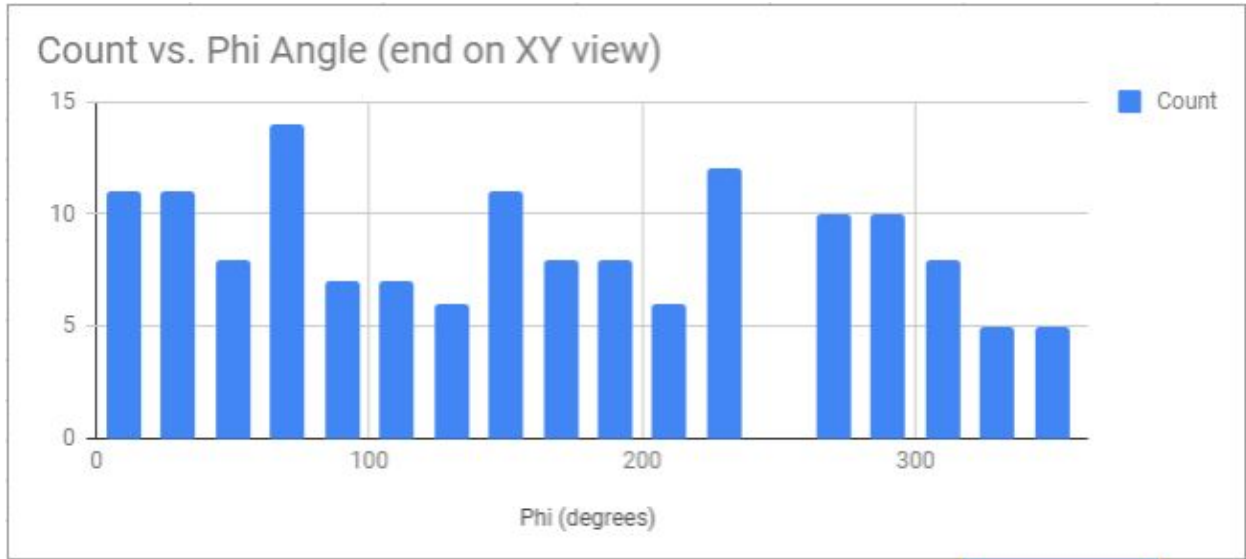
Collaboration Results (10,000 event dataset)

CMS PHI histogram

CMS THETA histogram

Comparison, Ottawa vs. Collaboration Results

(Ottawa top in each pair, Collaboration bottom.)

Count vs. Phi Angle (end on XY view)

CMS PHI histogram

Count vs. Theta Angle (side on YZ view)

CMS THETA histogram

Conclusion

The data analyzed by the Ottawa physics group was consistent with the results of the entire collaboration. We observed an absence of events in the phi = 250 degree bin, but this absence of events was not present in the collaboration data. We found that the counts for phi angle did not depend strongly on angle, and we found that the counts for theta were highest along the beampipe (close to 0 and 180 degrees) and lowest close to perpendicular to the beampipe.