Abstract Submitted
for the APR14 Meeting of
The American Physical Society

A 2-D Sensitivity Study in Searching for a High Mass Z' Boson at $\sqrt{s} = 8$ TeV with the Dielectron Channel Using the ATLAS Detector AARON VERMEERSCH, Michigan State University — A possible signature of physics beyond the Standard Model could be the observation of an additional neutral, heavy boson such as the Z'. The signal would present itself in the invariant mass spectrum through its decay to dilepton pairs as a resonance on an otherwise irreducible falling background from the Drell-Yan process. Currently at ATLAS, the search for this resonance relies on the invariant mass as the discriminating variable. However, this neglects the potential increase in sensitivity due to the expected angular distributions which stem from the new physics. A sensitivity study was conducted that shows the expected mass limits for two different search scenarios in the high mass region, one using the invariant mass of the dielectron pair and another that is dependent on angular variables, for multiple benchmark Z' models.

Aaron Vermeersch
Michigan State University

Date submitted: 08 Jan 2014 Electronic form version 1.4