Summer 2013

Understanding Proton Spin Structure through Polarized p+p Collisions at 200 GeV at STAR

Stephen Place
Valparaiso University

Author: **Stephen Place**

Department: Physics

Faculty Sponsor: Adam Gibson-Even

Title*: Understanding Proton Spin Structure through Polarized p+p Collisions at 200 GeV at STAR*

Abstract:
Measurements of spin observables at the Relativistic Heavy Ion Collider at Brookhaven National Laboratory provide unique insight into the contribution of a proton's constituents to its spin. The Solenoidal Tracker at RHIC (STAR) is sensitive to the proton spin from polarized proton-proton collisions. One of the primary products of these collisions are neutral pions, (π^0) which decay into two photons. The photons are reconstructed in the endcap electro-magnetic calorimeter of STAR, and are used to reconstruct the π^0 and its properties. Measurements of both the longitudinal and transverse spin asymmetries in the production of π^0 from data taken in 2006 have made some contributions in our understanding of the structure of the proton. New data taken in 2009, in an experimental setup resulting in less background and with more statistics, will provide greater precision to the final results. Some results from 2006 and preliminary work on 2009 data will be shown.