

**Speaker: Dr. Jacob Ethier**

**Date: Tuesday, July 19, 2016**

**Time: 4 pm**

**Room: Lorentz room**

**Title: An iterative Monte Carlo determination of spin-dependent PDFs and fragmentation functions**

**Abstract:** Precise extraction of spin-dependent parton distribution functions (PDFs) is crucial for our understanding of the spin structure of the nucleon. Fragmentation functions (FFs), which describe the hadronization process, also play a vital role in determining parton spin densities via analyses of polarized semi-inclusive deep inelastic scattering (SIDIS) data. Both of these non-perturbative functions have long been explored by global analyses of various QCD processes, however, the majority of these studies utilize only a single chi-squared fit to experimental data. Recently within the JAM collaboration, we have implemented a new Monte Carlo based analysis to extract information on spin PDFs and FFs at next-to-leading order (NLO) from DIS and single-inclusive annihilation (SIA) data, respectively. In this talk, I will outline the details of this new methodology and present the latest results of our PDF analysis including, for the first time, extraction of higher twist distributions. I will also present some results on the first ever Monte Carlo based analysis of pion and kaon FFs. I will then conclude with some details on an upcoming combined DIS, SIA, and SIDIS analysis.