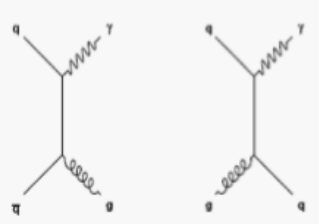
Study of CKKW matching method in Herwig with γ+jets



Sudha Ahuja

University of Delhi, India

Short term MCNet student @ KIT, Karlsruhe

with Dr. Stefan Gieseke

INTRODUCTION

About me:

Collaborate in CMS experiment at CERN and work on the analysis of direct photons.

Direct photons are photons which directly emerge from the hard scattering of partons so they provide a clean signature of the underlying hard scattering dynamics. They help in validating perturbative QCD and in studying gluon distributions inside proton. Their study is crucial for jet energy resolution studies. They are backgrounds to many SM and BSM signatures. Thus an understanding of direct photons is very important.

- **Steps involved**
  - ✓ **To study photons coming from hard scattering of partons over a large P_T^{γ} range**
  - ✓ **To improve the signal/background ratio and measure the direct photon cross section.**

The project and its GOAL

- **Matrix element calculations give descriptions for the hard process while parton showers simulate the soft QCD processes. Combining them results in double counting of events. The ME-PS matching procedures try to address this and provide inclusive samples.**
- **Goal of my MCNet project is to study the CKKW matching method in Herwig with γ+jets and validate it against other MC generators and data.**
- **Currently, I am trying to make the CKKW method work inside Herwig using γ+jets.**
- **I have studied γ+jets earlier with MC generators such as Pythia and Alpgen. This project gives me an opportunity to learn about a different MC generator at a much deeper level.**