

- The main goal of the project was to prepare data preselection and study the possible background processes for a production of Z boson associated with two b-jets at 13 TeV.
- The possible background processes have been identified as:
 - $t\bar{t}$
 - $W^\pm Z^0$
 - $Z^0 Z^0$
 - $W + b\bar{b}$
 - $Z + c\bar{c}$ with c-jets misidentified as b-jets
 - single top production
 - inclusive $b\bar{b}$ production
- The geometrical, muon track reconstruction and jet tagging efficiencies have been studied along with appropriate cross-sections. The main source of background has been determined to be due to $t\bar{t}$.
- Real data (2015 and 2016) and available in the LHCb bookkeeping NLO Monte Carlo sample of $t\bar{t}$ have been processed with dedicated DaVinci code, that was prepared for this analysis.
- Additionally, due to a lack of centrally produced NLO Monte Carlo of $Z(\mu\bar{\mu})b\bar{b}$ and its implementations in external generators, a sample of $Z(e\bar{e})b\bar{b}$ from PowhegBOX generator has been processed in the same way as previously mentioned samples using Pythia8 LHE interface.
- The kinematic distributions for reconstructed Z boson and b-jets have been compared between samples and data. Possible ways of reducing $t\bar{t}$ background have been discussed.
- No other background process could have been studied due to the lack of NLO Monte Carlo samples.