# Low–$p_T$ UPC $D^0$ analysis using '23 UPC reconstruction data

- **Analysis note freezing (v3). Pre-approval presentation will be at next Friday (February 28th)**

- **Update of the week**
  - Revisit the invariant mass fit
    - The signal peak (double-gaussian mean) is not well captured. This is improved by relaxing the double-gaussian mean floating window
    - We set up the framework to study the signal peak width differences btw data and MC. Study is ongoing to study the resolution effect and the possible mis-modeling with MC.
    - Rerunning the forest sample to get more margin in the D mass sideband. This will help to have a more robust background level determination
  - Prompt ($D^0$) production fraction study
    - Framework is setup for extracting the prompt fraction in data and MC
    - The extracted $f_{prompt}$ value in MC is quite consistent with the old analysis HIN-24-003
    - At a first look, we suffer from the low statistics to extract the $f_{prompt}$ value as a function of rapidity in data in the low-pT region. We will need to consider merging the rapidity bin in order to get a statistically-significant estimate.

February 21st 2025 **Group Meeting**