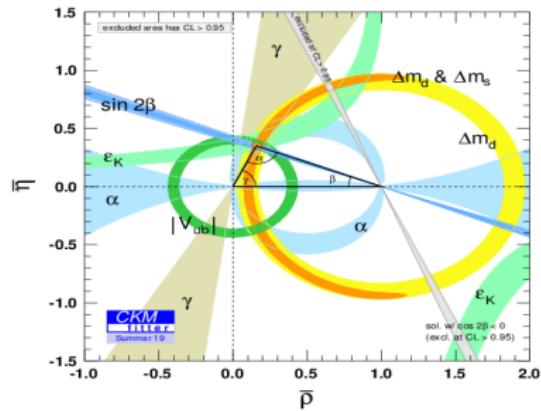


# LHCb UK Annual Meeting

Martin Tat

Oxford LHCb

8th January 2021



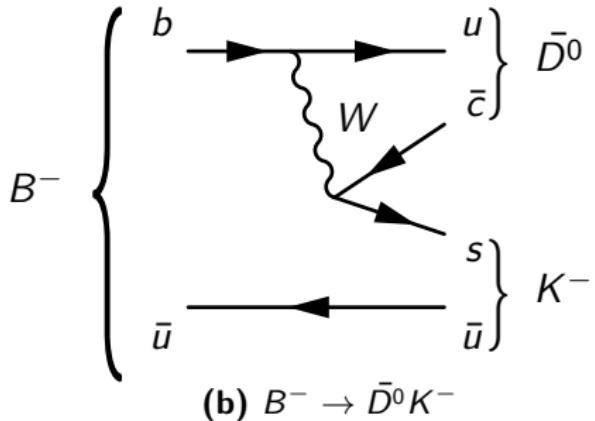
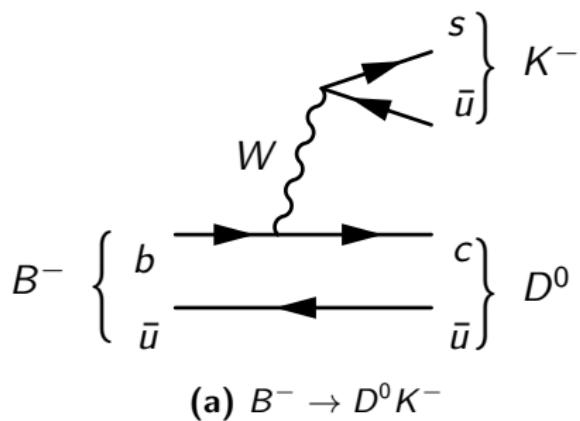
# About myself

- From Kristiansand, Norway
- 4-year Master of Physics, University of Oxford
- PhD with LHCb at University of Oxford
- Supervisors:
  - Prof Guy Wilkinson (analysis)
  - Prof Neville Harnew (detector)



# Analysis project: $\gamma$ measurement

- $B^\pm \rightarrow D K^\pm, \quad D = D^0, \bar{D}^0$ 
  - $D \rightarrow K^+ K^- \pi^+ \pi^-$
- Interference between  $b \rightarrow c$  and  $b \rightarrow u \implies \gamma$  measurement!
- 4-body decay  $\implies$  5-dimensional phase space
- Strong phase inputs from BESIII



# Analysis project: $\gamma$ measurement

- Unbinned model-dependent fit
  - LHCb isobar amplitude model [arXiv:1811.08304](https://arxiv.org/abs/1811.08304)
  - Generate events and fit to the same model
  - $\gamma$  precision:  $11^\circ$  with 2000 events
- Binned model-independent fit
  - Develop binning scheme
  - $\gamma$  precision with 8 bins:  $13^\circ$ ,  $12^\circ$  with further modifications
  - $\gamma$  precision with 4 bins:  $15^\circ$ ,  $14^\circ$  with further modifications
- Next steps:
  - Pick out events from LHCb and BESIII data
  - Extract strong phases from BESIII data and measure  $\gamma$  from LHCb data
  - TORCH with Prof Neville Harnew