



中山大學
SUN YAT-SEN UNIVERSITY

CEPC top coupling & top mass discussion

Huayu Liu

huayuliu9499@163.com

Sun Yat-sen University
28/2/2025



Outline



- Detailed overview of top EW CP measurement at ILC
- Detailed overview of top EW CP measurement at FCC
- Overview of what we should do



Detailed overview of top EW CP measurement at ILC



➤ [Link](#)

➤ Outline:

- Introduction
- Top quark production at the ILC
- Event generation and technical remarks
- Event selection
- Measurement of the forward backward asymmetry
- The slope of the helicity angle distribution
- Precision of Form Factors
- Summary and outlook



Detailed overview of top EW CP measurement at FCC



➤ [Link](#)

➤ Outline:

- INTRODUCTION
- THEORETICAL FRAMEWORK
- OPTIMAL-OBSERVABLE STATISTICAL ANALYSIS
- SENSITIVITY TO TOP EW COUPLINGS
- RESULTS AND DISCUSSION
- SUMMARY AND OUTLOOK



Overview of what we should do



➤ Task path

- Similar to ILC
- Observable:
 - The cross section;
 - The forward backward asymmetry A_{FB}^t ;
 - The slope of the distribution of the helicity angle;
- Use fully polarized samples
- We want to take the differences in the beam condition as an uncertainty like what ILC does

The cross section and therefore its uncertainty scales with the polarisation can be calculated. The observables A_{FB}^t and λ_t vary only very mildly with the beam polarisation.

➤ This week update

- Original idea is:
 - using truth-level of the top to separate the polarized samples to two fully polarized samples.
 - After checking there is no such information.
- So, we may be should start from samples production?
 - Plan to generate fully polarized samples(two set of samples)
 - How?Any help is welcome!

