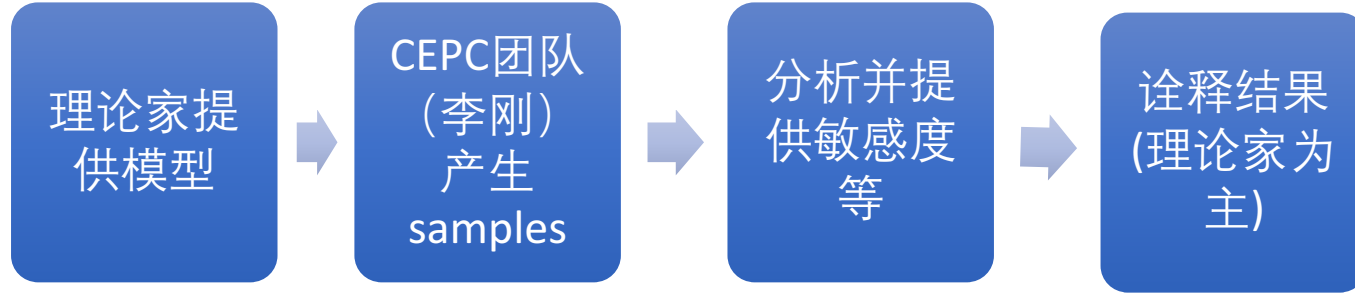


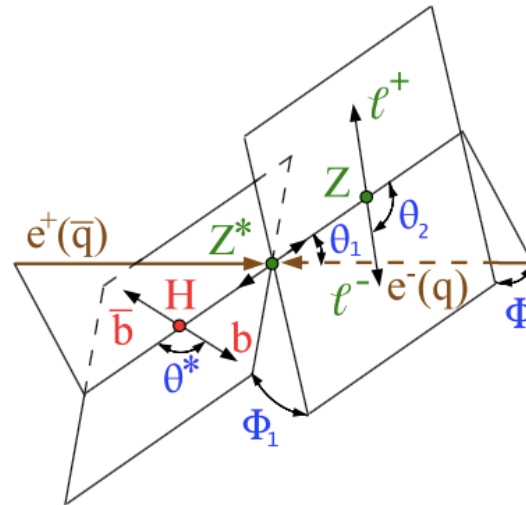
# Introduction



- “理论为先”，所以需要理论家给我们提供各种在CEPC下可以用得上的，并有一定可操作性，在一年内可以完成的与“Higgs”有点关系的模型。
- 第二步、第三步难点在于稳定的人手。

# CEPC Higgs white paper 涉及内容

- Sub-percent level precision should be sensitive to some thing...
- $H \rightarrow$  Invisible/exotic decay (通过  $H \rightarrow ZZ \rightarrow$  invisible)
- CP test ( $ZH \rightarrow \mu\mu b\bar{b}$ ). (JHU)
- $H \rightarrow$  long live particle
- 2HDM, etc...



Property	Estimated Precision	
	CEPC-v1	CEPC-v4
$m_H$	5.9 MeV	5.9 MeV
$\Gamma_H$	2.7%	2.8%
$\sigma(ZH)$	0.5%	0.5%
$\sigma(\nu\bar{\nu}H)$	3.0%	3.2%

Decay mode	$\sigma \times \text{BR}$	BR	$\sigma \times \text{BR}$	BR
$H \rightarrow b\bar{b}$	0.26%	0.56%	0.27%	0.56%
$H \rightarrow c\bar{c}$	3.1%	3.1%	3.3%	3.3%
$H \rightarrow gg$	1.2%	1.3%	1.3%	1.4%
$H \rightarrow WW^*$	0.9%	1.1%	1.0%	1.1%
$H \rightarrow ZZ^*$	4.9%	5.0%	5.1%	5.1%
$H \rightarrow \gamma\gamma$	6.2%	6.2%	6.8%	6.9%
$H \rightarrow Z\gamma$	13%	13%	16%	16%
$H \rightarrow \tau^+\tau^-$	0.8%	0.9%	0.8%	1.0%
$H \rightarrow \mu^+\mu^-$	16%	16%	17%	17%
$\text{BR}_{\text{inv}}^{\text{BSM}}$	—	< 0.28%	—	< 0.30%

# EF02: Kickoff meeting

<https://indico.ihep.ac.cn/event/12025/>

目前：张昊、陈明水，我  
愿意来做联系人的事，为大家服务。  
欢迎更多人自愿来做。

## Snowmass EF02


Wednesday, 24 June 2020 from 20:00 to 21:20 (Asia/Shanghai)

Manage ▾

**Description** 腾讯会议： 141 293 329

agenda 上传文件密码： 1234

### Wednesday, 24 June 2020

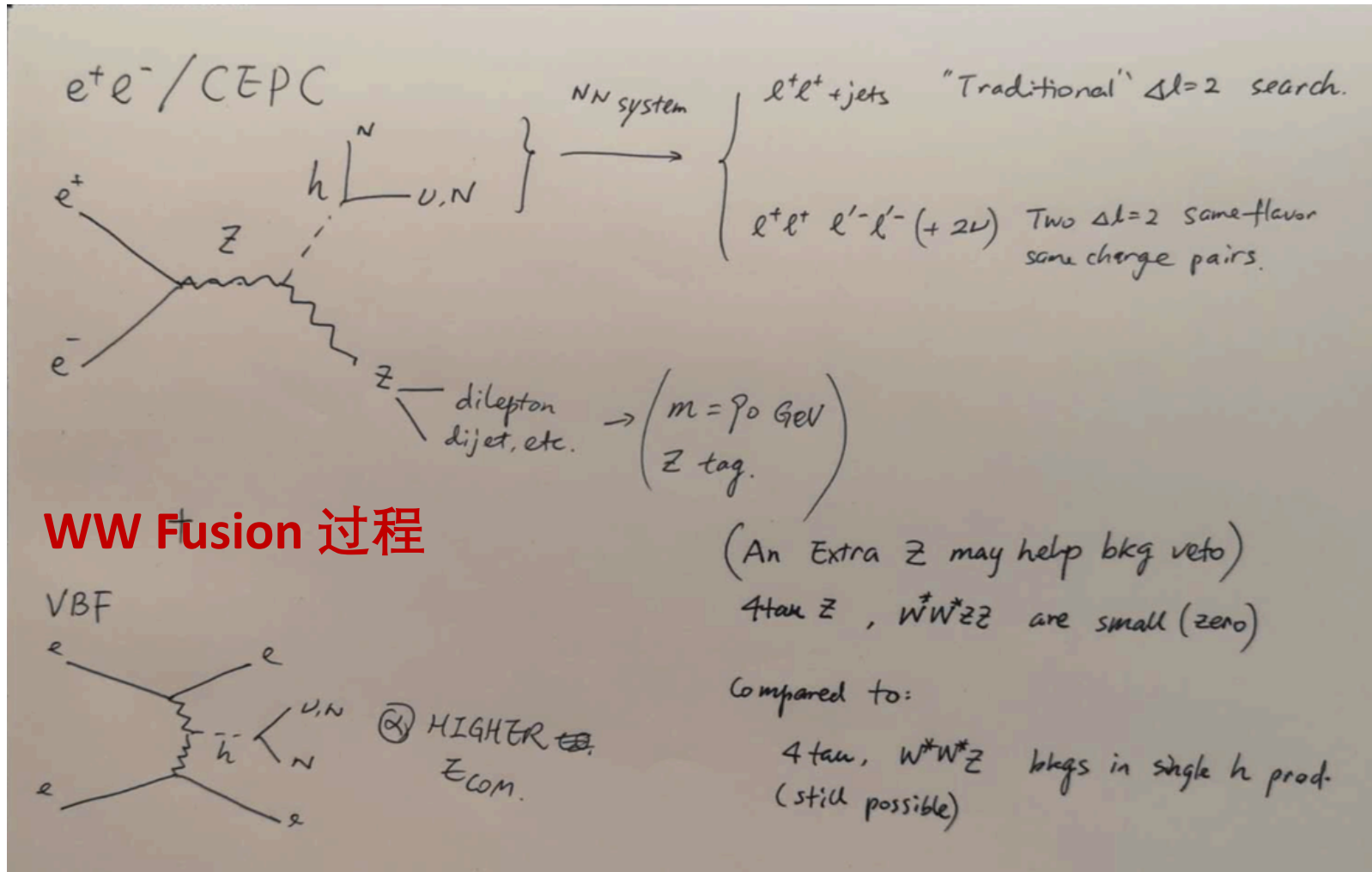
- |               |   |   |
|---------------|---|---|
| 20:00 - 20:20 | Introduction 20'  | ▾ |
| 20:20 - 20:40 | h- $\rightarrow$ RHN from LHC to CEPC 20'<br>Speaker: Gao, Yu<br>Material: <a href="#">Slides</a>  | ▾ |
| 20:40 - 21:00 | Composite Higgs at CEPC 20'<br>Speaker: Prof. Jing Shu (ITP)  | ▾ |
| 21:00 - 21:20 | anomalous H- $\rightarrow$ ZZ at CEPC 20'<br>Speaker: Dr. Hao Zhang (Technical Institute of Physics and Chemistry, CAS)   | ▾ |

# Search for Massive neutrino at CEPC

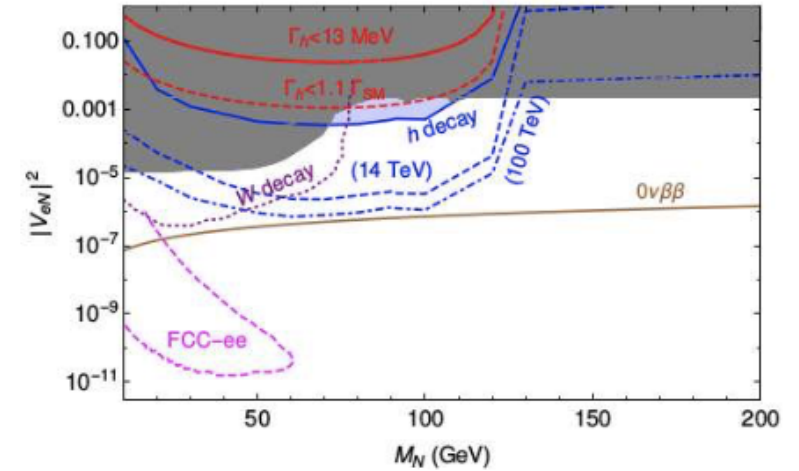
高宇 (IHEP)

## Zh 过程

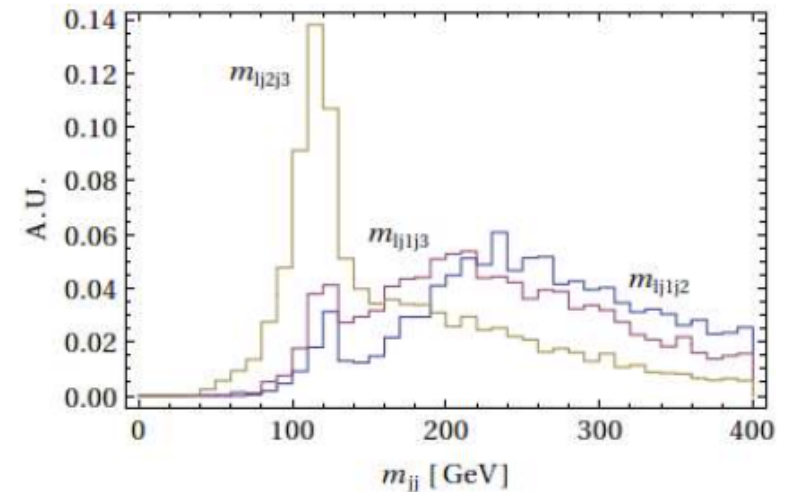
比起LHC, CEPC更加干净。



LHC has sensitivity on the  $h \rightarrow N\nu \rightarrow ll\nu\nu$



A.Das, B.Dev, C.S.Kim, 1704.00880



A.Das, Y.Gao, T.Kamon, 1704.00881

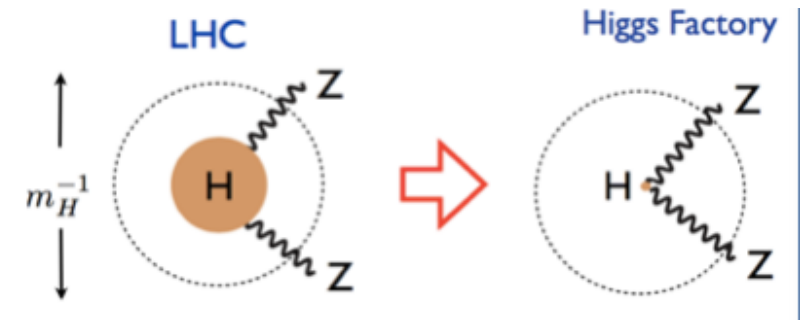
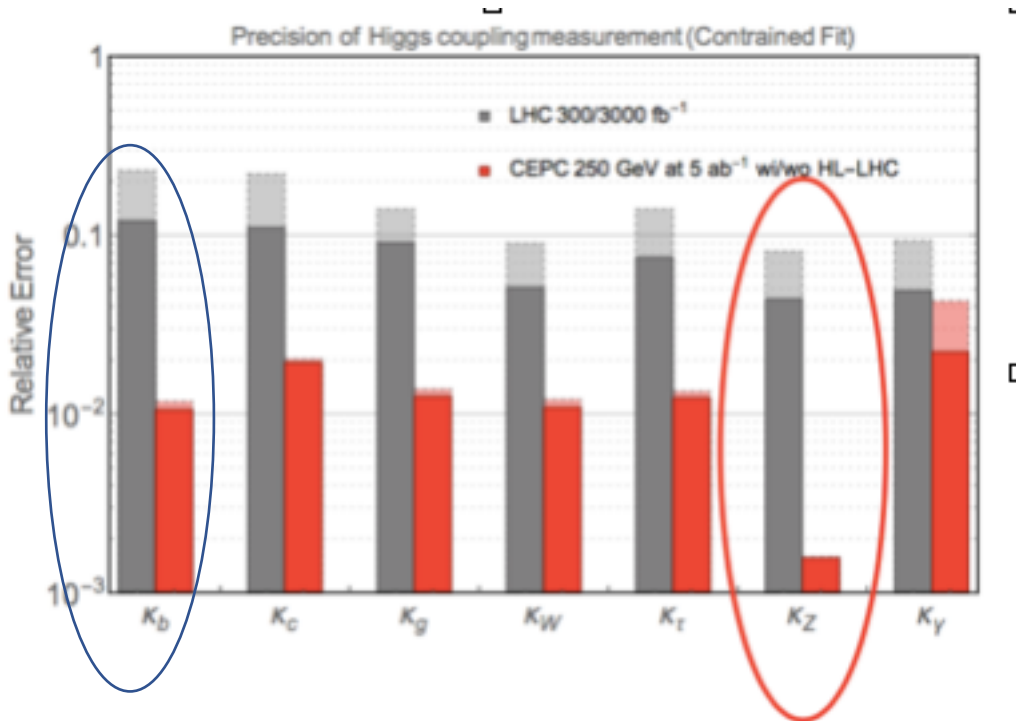
# Composite Higgs

舒菁 (ITP)

Suppose in NP Scale, we see substructure of Higgs

Possible NP deviation

$$\delta = c \frac{m_W^2}{M_{\text{NP}}^2}, \quad c = \mathcal{O}(1)$$



The precision of the Higgs measurement could probe the substructure of the Higgs

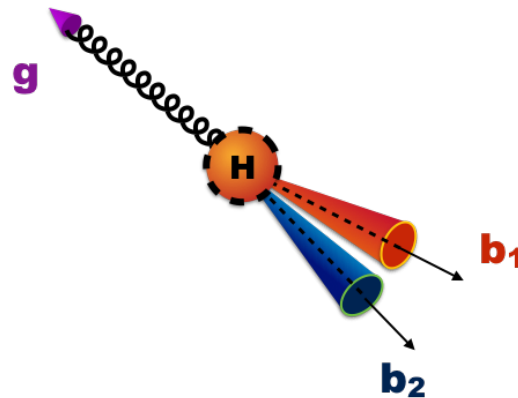
# Investigate the Lorentz structure of the Yukawa interaction

张昊 (IHEP)

- Precisely Higgs Physics at CEPC — — beyond the  $\kappa$  scheme.
- Investigate the CP property of the  $hb\bar{b}$  Yukawa interaction via the interference effect in Higgs boson decay.

$$\mathcal{L} = y_f h \bar{f} (\cos \alpha_f + i \gamma_5 \sin \alpha_f) f$$

$$y_f \in \mathbb{R}^+, \quad \alpha_f \in (-\pi, \pi]$$



$$\zeta_H \equiv \frac{2E_{b_1} E_{b_2}}{\sqrt{E_{b_1}^2 + E_{b_2}^2}} \cos \theta_{b_1 b_2},$$

